A Clinical Study of Tropical Amoebic Liver Abscess in Seychelles.

Thesis submitted for the degree of Doctor of Medicine

by

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C O N T E N T S.

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Fig. 1.

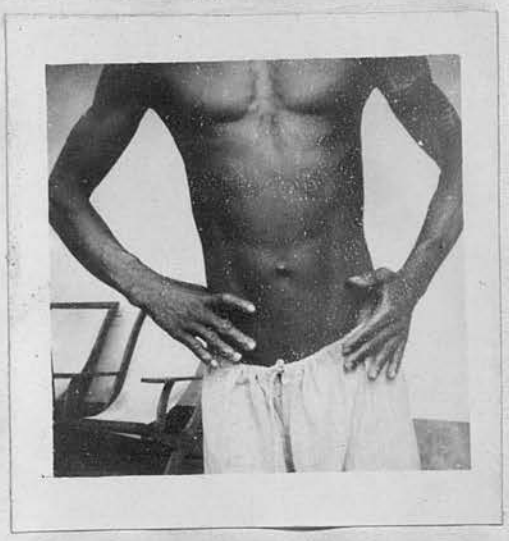

Fig. 2.

Fig. 3.

Amoebic Liver Abscess. Note the asymmetry and bulging of the right lower chestwall.

Fig. 4.

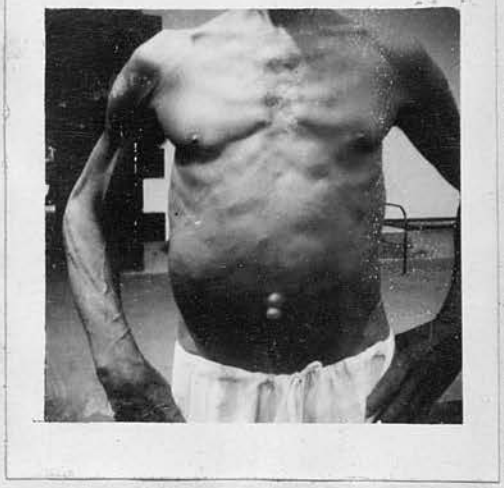

Fig. 5.

Fig. 6.

Amoebic Liver Abscess. Note the bulging in the right abdominal flank.

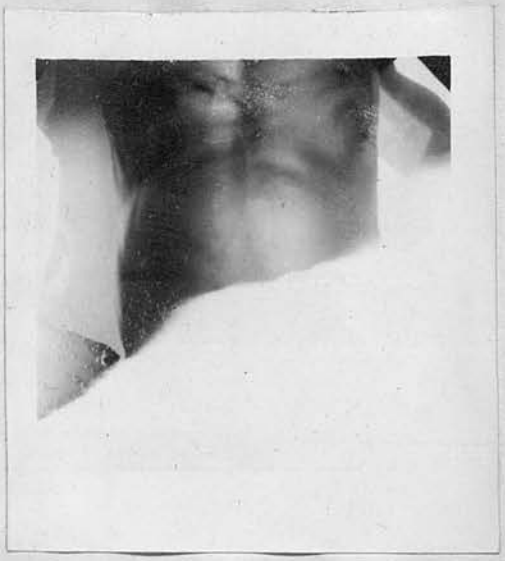

Fig 7.

Fig. 8.

Amoebic Liver Abscess involving the right lobe and appearing as a tumour in the epigastrium. Contrast with Fig. 8 taken from another Patient.

Fig. 9

Fig. 10

Two other cases of Amoebic Liver Abscess with bulging in the epigastrium. Aspiration has been performed. Collodionised cotton wool has been removed from the sites of aspiration leaving a faintly blanched area of skin.

Fig. 11.

Fig. 12.

The chalked line shows the extent of the enlargement downwards in two Amoebic Liver Abscess cases. Note the compensatory enlargement of the left Liver lobe in Fig. 11.

INTRODUCTORY STATEMENT ON THE SCOPE OF THE THESIS.

In this thesis, tropical liver abscess has been discussed from clinical observations made on 110 cases treated between January 1938 and December 1946 inclusive, at the main Seychelles Government Hospital situated on Mahé the principal island.

The archipelago comprises ninety-two islands. These are dispersed over a wide area in the Indian Ocean, the most distant from Mahé being 640 miles. As sea-transport is sometimes difficult and irregular, the cases that have been admitted have arrived in varying states. Although most cases come from different parts of Mahé and from islands within easy reach of Mahe, the cases seen are generally very advanced. The reason for this is that the average inhabitant looks upon diarrhoea as a simple condition and he consumes some astringent infusion of his own native making till the diarrhoea ceases. Colic, flatulence, and tenesmus fall into a similar category, and various herbal native remedies are consumed till these conditions disappear. None of these native remedies seems to be amoebicidal for amoebic dysentery. Consequently liver abscess, in spite of these remedies, is very common in these islands.

A summary of the history of the disease and its relevant literature is given in the thesis. Discussions have been made fully on the etiology, epidemiology,

symptomatology, pathology, bacteriology, diagnosis and differential diagnosis, prognosis, treatment and mortality incidence. Conclusions have been drawn from the investigations made. Cases have been quoted in the text of the thesis and contrasted with the findings in the literature of the disease of past and more recent years. Finally, references quoted have been classified alphabetically, and an appendix has been included of chart sheets of cases which have been mentioned in the text.

SUMMARY OF THE LITERATURE AND HISTORICAL REMARKS.

The literature read includes accounts of the disease recorded by observers in different parts of the world. Tropical liver abscess has been singled out by these writers as being due to the entamoeba histolytica. This has been borne out in the series because the amoeba has been found in the thick debris and in the smears from the abscess walls of those who have died from this condition. It is more common to find a negative stool in an amoebic liver abscess case than it is to find the classical miscroscopic symptoms of amoebic dysentery. See table 11.

That association existed between the entamoeba histolytica and the amoebic liver abscess has been shown by Boeck and Drbohlav in 1925 (Muir and Ritchie, 1932) at the Harvard Medical School (Rogers, 1939) when these two observers were able to produce typical dysenteric lesions by injecting kittens per rectum with the subcultures of the entamoeba histolytica. Out of the sixteen kittens used for the experiment, eleven showed dysenteric lesions, and two of these also developed liver abscess (Muir and Ritchie, 1932).

Various tables, with percentages of the different findings, have been submitted. A full list of references has been given.

Quoting Masters (1929): Liver abscesses were operated upon in the days of Hippocrates.

Quoting Osler (1938): Lamb, in 1859 first

described the entamoeba histolytica and Losche subsequently in 1875.. Kartulis in 1886 found with the endemic dysentery in Egypt, entamoeba histolytica in stools and liver abscesses. In 1890 Osler found entemoeba in a case of dysentery with liver abscess, originating in Panama.

Quoting Cecil (1944): In 1891 Councilman and Lafleur working in Osler's wards in Baltimore established amoebic dysentery as a definite entity. The situation was greatly simplified in 1900 when the etiology of bacillary dysentery was fully established. There was still much confusion because amoebae were found in the stools of healthy people. In 1903 Schaudinn, working on amoebic dysentery, separated the pathogenic entamoeba histolytica from the non-pathogenic entamoeba coli.

Quoting Manson (1945): The most frequent complication of amoebic dysentery is liver abscess; but on looking through the statistical records of other countries where amoebic dysentery occurs, I find that this complication is not common except in this colony. Not only is it common in this colony, but the precursor of liver abscess, an amoebic hepatitis, is even more common, and it is this that led me to write this thesis because of the frequency of the complications of amoebic dysentery. During the nine years under review I record the astounding figures of 2292 cases of amoebic hepatitis and 110 cases of amoebic liver abscess.

Quoting Manson (1945: Until recently it was thought that no differences existed between the right and left branches of the portal vein, the hepatic artery and the hepatic ducts, though the right liver lobe is proportionately three times bigger than the left. Again quoting Manson (1945): Cantlie in 1884 first noted the enlargement of the left liver lobe following upon total destruction of the right. On account of this and of the embryological development, it was suggested that the generally accepted anatomical division of the liver is incorrect and that it should be divided, not by the antero-posterior fissure, but by a line drawn from before backwards through the fundus of the gall-bladder to the spot where the inferior vena cava grooves the back of the liver: this is the midline of the liver. The position of this line is borne out by pathological studies and the results of the injection of the portal and hepatic veins and hepatic artery (McIndoe and Counseller). Copher and Dick (1928) demonstrated that the distribution of the portal streams in the liver of the dog can be determined by injections of trypan-blue, and that there are at least three distinctly separate currents (streamline phenomena) in the portal vein. Enlargement of the left liver lobe ensues upon partial or complete destruction of the right, which is a feature of considerable importance in diagnosis. This compensatory hepatic enlargement has been found in 32.72% of the cases in this series, comprising 30.9% in the left

lobe and 1.82% in the right.

A further quotation from Bruce and Walmsley(1939): The liver receives its blood supply from the hepatic artery and the portal vein, and after circulating through the liver, the blood is returned through the inferior vena cava by the hepatic veins. The portal vein brings to the liver the blood which has already passed through the capillaries of the whole abdominal alimentary canal, except the lower end of the rectum and the anal canal.

As the amoebic infection primarily affects the intestine, and microhistologically, the entamoebae may be found in the walls and floor of the intestinal amoebic ulcer, and in fortunate sections the entamoebae may be found within the venules of the portal vein (Robertson Ogilvie, 1945). The route is therefore demonstrated whereby the liver becomes infected and the seat of a tropical amoebic abscess.

Quoting Manson (1945): Amoebic liver abscess appears to be the result of portal embolism from amoebic ulcers in the bowel. According to Rogers (1930),the focus of intestinal infection is usually in the right sector of the abdomen, either in the caecum or ascending colon; this fact accounts for the common situation of the abscess in the right liver lobe. In this series, the right liver lobe abscess is found in 98.18% of cases, whereas the left lobe abscess only in 1.82% of cases, and the tenderness over the caecum is found in 24.55% of cases as against 10.91% of cases of

tenderness over the sigmoid, totalling in all 35.46% of cases.

From a consideration of these figures, does the pathology of the liver and the portal system suggest that the left side of the abdomen is drained into the left liver and the right side into the right ?

The following tables illustrate the liver abscess site incidence rate and the percentages of cases found showing tenderness over the caecum and the sigmoid.

Table 1. Liver Abscess Sites.

Sites	Number of cases	Percentages
Right lobe	108	98.18%
Left lobe	2	1.82%
	Total 110	100 %

Table 2. Tenderness over Caecum and Sigmoid compared.

Sites	Number of cases	Percentages
Caecum	27	24.55%
Sigmoid	12	10.91%
	Total 39	35.46%

One would expect, if tenderness is to be a diagnostic feature of the disease in the primary stage within the bowel, that a higher percentage of the left lobe abscesses would have been found. But this has not been the case in this series. The diagnosis of amoebic dysentery is often made on ~~sigmoidoscopy~~

sigmoidoscopy alone. If then the rectum is so frequently invaded by the amoeba, one would expect a greater incidence of disease in the left liver lobe. Therefore doubt must be cast on our present conception as to how the amoeba reaches the liver at all. Unless possibly, the disease, being a large intestine disease, settles in the caecum and it is not until later that the amoeba causes damage to the rectum and therefore the possibility of a right lobe liver abscess is to be expected oftener than in the left lobe liver abscess. This may be due to the dissemination of the disease from the caecum to the right liver lobe and it is not until later when nature possibly has produced immunity, so protecting the left lobe, that the sigmoid and rectum become invaded.

GEOGRAPHICAL DISTRIBUTION.

Quoting Manson (1945): Liver abscess of the type known as tropical abscess, for the most part a disease of warm climates, corresponds in its distribution to amoebic dysentery. This is well borne out by eminent authors and observers, including Rogers and McGaw (1930) working in India, Cecil (1944) working in the United States, Osler (1938) in U.S.A., and Price (1946) in Britain. It is encountered to a greater or lesser degree over widespread areas in the tropics and subtropics, and is found more in countries where amoebic dysentery is prevalent, such as India, China, Indo-China, and the Phillipines, and also in North and Central Africa, the Southern United States of America, South America, and the West Indies.

As an aftermath of the recent war, amoebic liver abscess, and amoebic dysentery, may be encountered in varying degrees of severity in Great Britain and in temperate countries, among troops and civilians who have served in tropical areas where amoebic dysentery was endemic. The condition may be obscure and diagnosis sometimes difficult (Fluker, 1946). This is a point of importance in diagnosing a case of obscure pyrexia in a person who has been in the tropics for any period of time whether short or long, especially in areas where amoebic dysentery is endemic. Doubtless some cases may be straightforward and easily diagnosed, but there are obscure cases which may be undiagnosed and the unfortunate patient may develop

a liver abscess to such an advanced degree as to make treatment, recovery and convalescence more prolonged and more tedious.

EPIDEMIOLOGY.

Amoebic Dysentery is endemic in the Seychelles group of islands. This group is situated in the middle of the Indian Ocean South of the equator. The population of approximately 35,000 is cosmopolitan, the great majority being of African descent. There has been much admixture of blood and the word crasis could have no better Oxford Dictionary description than "Seychellotic". There is French, British, Indian and Chinese blood mixed with African. It is peculiar though that the incidence of liver abscess is higher in the pure natives than in any other mixture of races, but the coloured race takes a good second place. This is due to a variety of factors, the main ones being, (as has been mentioned under "Etiology"), the amount of alcohol consumed and the lack of sanitary conditions and a balanced diet, both of which are sadly lacking in the colony.

Little can be said concerning the climate, humidity, and rainfall, which could throw any light on the disease and its complications with the seasonal

variations, except perhaps concerning rainfall; the general disease incidence rate does rise owing to the high degree of pollution of existing domestic water-supplies.

A table has been given showing the general climatic conditions in the Seychelles over a one-year period. The records over the last ten years indicate little variation beyond what is shown in table 3, except that the rainfall over a year period does fluctuate between 80 and 120 inches of annual rainfall and as mentioned above, the higher the fluctuation, the greater is the disease incidence.

TABLE 3. SEYCHELLES. (MAHE) GENERAL CLIMATOLOGICAL TABLES.

Month	Pressure at M.S.L. Average mean of 24 hours.	Air Temperature Daily range. Average.		Mean of Daily max.	Mean of Daily min.	Extreme Highest	Extreme Lowest	Rain Average fall.	Rain No. of days with daily 2.5 m.m. (0.1 in) or more of rain	Rain Max. fall in 24 hours	Relative Humidity % 1000 local time Observations at	Wet bulb temperature. 1000 local time Observations at
	mb.	°F.	°F.	°F.	°F.	°F.	°F.	mm.	in.	mm.	in.		
January	1012	80	83	85	77	87	70	406	16.0	15	256	10.1	80	76
February	1011	81	84	86	77	87	71	297	11.7	10	215	8.5	78	77
March	1011	81	85	87	78	89	69	250	9.8	11	154	6.1	76	77
April	1011	82	85	88	78	89	72	196	7.7	10	90	3.5	75	78
May	1011	81	85	87	78	89	69	165	6.5	9	113	4.4	76	77
June	1012	79	82	84	77	87	68	114	4.5	8	114	4.5	77	76
July	1013	78	81	82	75	85	68	78	3.1	7	68	2.7	78	74
August	1013	78	81	82	76	84	70	56	2.2	6	62	2.4	76	74
September	1013	79	82	83	76	85	68	137	5.4	8	261	10.3	76	75
October	1013	79	83	85	76	86	69	146	5.7	8	140	5.5	76	75
November	1012	79	83	85	76	86	68	240	9.4	12	131	5.2	76	76
December	1012	79	83	85	76	87	69	346	13.6	15	155	6.1	79	76
Year	1012	80	83	77	--	89	68	2432	95.6	121	261	10.3	77	76

Periods:- Pressure and temperature, 27 years.
Rain (average fall and no. of days periods ending in 1936; (max. fall in 24 hours), 30 years.
Humidity and wet bulb temperature, 1911 - 35.

The complications of amoebic dysentery are seldom seen below the age of 20 years, and below that age liver abscess has occurred in only 2.73% of cases in my collection, the youngest being a native girl aged 2 years. The greatest incidence occurs in the age group 21 to 40 years, the number of cases being 61.82%. In the next decade the incidence lessens to 23.64% of cases, and between 51 and 60 the incidence is only 7.27%. Over 60, the incidence is 4.54%, the oldest case being a native adult female, aged 78.

The inference to be made here is that the complications of amoebic dysentery are found in just those years which are the most productive physically and mentally and when good health and immunity to chronic diseases would be expected.

The following tables illustrate the race incidence, the sex incidence, the age incidence, of the tropical liver abscess as found in the series.

TABLE 4. RACE INCIDENCE.

Races	No. of Patients	Percentages
White race. Europeans.	0	0
White race of European descent.	4	3.63%
Mixed race	14	12.73%
Black race	91	82.73%
Indians	1	0.91%
Chinese	0	0
Other races	0	0
Total	110	100%

TABLE 5. SEX INCIDENCE.

Sexes	No. of cases	Percentages
Male	92	83.64%
Female	18	16.36%
Total	110	100%

TABLE 6. AGE INCIDENCE.

Age in years.	Number of cases.	Percentages.
Below 20	3	2.73%
21 to 40	68	61.82%
41 to 50	26	23.64%
51 to 60	8	7.27%
Over 60	5	4.54%
Total	110	100%

It will be noticed that the European, the Indian and the Chinese, do not suffer from this complication of amoebic dysentery. This has been stressed above. This section of the community is well-fed and lives an almost entirely different life from those who develop such complications, in so far as it also has good housing, clean water-supplies, and adequate sanitation, and therefore does not suffer primarily from the disease which can cause such secondary bodily devastation in the form of amoebic hepatitis and liver abscess.

For comparison, table 7 shows the incidence rate of amoebic dysentery, hepatitis, and liver absecess in the in-patients and out-patients figures over the last nine years.

TABLE 7. INCIDENCE RATE OF AMOEBIASIS, HEPATITIS AND LIVER ABSCESS.

Year	Diagnosis	In-patients	Out-Patients	Total	Cured	Died	Mortality Percentages.
1938	Amoebic Dys.	35	No fig.	35	34	1	? 2.85%
	Hepatitis	73	" "	73	73	0	0
	Liver Abs.	6	0	6	5	1	16.66%
1939	Amo. Dys.	35	No fig.	35	31	4	? 11.42%
	Hepatitis	82	" "	82	82	0	0
	Liver Abs.	0	0	0	0	0	0
1940	Amo. Dys.	44	No fig.	44	42	2	? 4.54%
	Hepatitis	174	" "	174	174	0	0
	Liver Abs.	4	0	4	4	0	0
1941	Amo. Dys.	100	156	256	254	2	0.78%
	Hepatitis	164	89	253	253	0	0
	Liver Abs.	11	0	11	11	0	0
1942	Amo. Dys.	97	160	257	247	10	3.85%
	Hepatitis	173	117	290	290	0	0
	Liver Abs.	10	0	10	10	0	0
1943	Amo. Dys.	130	208	338	333	5	1.48%
	Hepatitis	120	166	286	286	0	0
	Liver Abs.	17	0	17	16	1	5.85
1944	Amo. Dys.	132	416	548	538	10	1.82%
	Hepatitis	149	204	353	353	0	0
	Liver Abs.	24	0	24	22	2	8.33%
1945	Amo. Dys.	125	238	363	347	16	4.4 %
	Hepatitis	296	280	576	576	0	0
	Liver Abs.	10	0	10	9	1	10. %
1946	Amo. Dys.	296	181	477	472	5	1.05%
	Hepatitis	117	88	205	205	0	0
	Liver Abs.	28	0	28	26	2	7.14%

No figures for out-patients were available for the period 1938 - 1940 owing to the lack of records.

Table 8 shows the incidence rate of cases of amoebic dysentery, amoebic hepatitis, and amoebic liver abscess treated as in-patients.

TABLE 8. INCIDENCE RATE OF CASES TREATED AS IN-PATIENTS.

Diagnosis	1938	1939	1940	1941	1942	1943	1944	1945	1946	Total
Amoebic Dysentery	35	35	44	100	97	130	132	125	142	840
Amoebic Hepatitis	73	82	174	164	173	120	149	296	127	1358
Amoebic Liver Abscess	6	0	4	11	10	17	24	10	28	110

This table has been given to clarify the in-patients figures and separate them from the out-patients figures, as the cases under discussion in this series are in-patients and not out-patients.

Table 9 shows the annual incidence rate of amoebic liver abscess per total annual population.

TABLE 9. ANNUAL INCIDENCE RATE OF AMOEBIC LIVER ABSCESS FOR THE NINE-YEAR PERIOD.

Year	Liver Abscess.
1938	6
1939	0
1940	4
1941	11
1942	10
1943	17
1944	24
1945	10
1946	28
Total	110

The drop to 10 cases in 1945 is inexplicable except by the fact that the local population swings like a pendulum in its desire for medical aid, the minor swing often being the result of temporary

hospital disrepute which is of their own making. There is no population in the world that reacts more to an increase in mortality however slight in the very hospital where they find medical succour and where that mortality has been due to mere coincidence and not to lack of medical care.

ETIOLOGY.

As Manson (1945) says, there can be no question of the existence of an intimate relationship between amoebic dysentery and liver abscess. Many well-authenticated statistics, as well as everyday experience, confirm this. Out of 3680 dysentery autopsies made in various countries, and collated by Woodward (Manson, 1945), 779 revealed abscesses of the liver. This shows a percentage of 21%. Masters (1920) states that 84.4% of the patients admitted to the Seamen's Hospital (? at Greenwich) who had liver abscess, revealed at the postmortem evidence of dysentery. Masters further says that in 90% of cases the organism is associated with or derived from dysentery processes in the colon. Rogers and McGaw (1930) state that tropical liver abscesses are always primarily due to the entamoeba histolytica gaining entrance to the radicles of the portal system in the infected submucous coat of the large bowel and passing to the liver through the portal system,and further add that between 80% and 90% at least of the cases are free

from secondary bacterial infection.

In this Seychelles series the entamoeba histolytica was found in the thick debris and in the liver pus from the abscess wall in 64.55% of cases, in the faeces in 19.91% of cases, the entamoeba histolytica cysts in the faeces in 18.18% of cases, while charcot-leyden crystals were found in the faeces in 5.45% of cases; 24.55% of cases gave a history of previously treated dysentery; 18.18%, of previously treated hepatitis; 10.91%, of untreated hepatitis. On the other hand, some patients gave no history whatsoever of any condition to simulate an amoebic infection. Many gave a history of diarrhoea, with flatulence and colic which they treated at home with some native astringent infusion remedy. But as has been mentioned there is no true amoebicidal remedy in this colony and unfortunately, although the inhabitants try to treat themselves with a concocted potion, they eventually fall victims to intestinal amoebiasis together with all its complications.

In these islands, the complications of amoebic dysentery occur mainly in the male population. The male adult uses alcohol as a form of food and energy, and these alcohols are chiefly obtained from the coconut tree in the form of calou, sugar cane in the form of bacca, and many other incidental alcoholic beverages including rum and brandy. It has been stated that calou contains Vitamin B complex (Manson, 1945),

a vitamin that might be termed an intestinal-disease-protecting vitamin. But unless this beverage is drunk fresh, it is contended that its alcoholic content, if left to ferment, negatives this very essential vitamin. Here then is the cause of the greater part of the high incidence of complications of amoebic dysentery in these islands. There is no vitamin protection in the beverages but only a liver cell-damaging agent which allows the amoebae to gain entrance to the liver via the portal system and so set up a hepatitis and a consequent possible liver abscess. This may sound paradoxical but it is contended, because of case histories, that the only difference that can be found between the male and the female way of living in these islands is in the amount of alcohol consumed and a hepatitis and liver abscess is almost non-existent in the female section of the adult community. Rogers and McGaw (1930) mention that females are perhaps less liable to amoebic dysentery because they stay more at home. This is not the case here because, although (as has been mentioned) the complications of amoebic dysentery are seen in the male, the disease itself with its minor protean manifestationshas among the female population an incidence which is very high.

Tables of the history comparison, laboratory findings, and alcohol incidence rate.

TABLE 10. HISTORY COMPARISON.

History	No. of cases	Percentages
No past history of dysentery or diarrhoea.	20	18.18%
Past history of undiagnosed diarrhoea.	31	28.18%
Past history of dysentery. Treated.	27	24.55%
Past history of hepatitis. Treated.	20	18.18%
Past history of hepatitis. Untreated.	12	10.91%
Total	110	100%

TABLE 11. LABORATORY FINDINGS.

Findings.	No. of cases	Percentages
Entamoeba histolytica in faeces	12	10.91%
Entamoeba histolytica cysts in faeces	20	18.18%
Entamoeba histolytica & cysts together in faeces	4	3.64%
Charcot-Leyden crystals alone in faeces	6	5.45%
No entamoeba histolytica or cysts in faeces	68	61.82%
Total	110	100%

TABLE 12. ALCOHOL INCIDENCE.

Persons	No. of cases	Percentages
Males	85	77.27%
Females	3	2.73%
Abstainers	22	20.00%
Total	110	100%

PATHOLOGY.

Leonard Rogers in 1903 (Rogers & McGaw,1930) described and illustrated the production of liver abscesses by entamoeba histolytica. Of the entry of the entamoeba to the liver, Rogers has also given the following explanation. The formation of single or multiple (up to four) large separate liver abscess surrounded by dense fibrous walls, which constitute the clinical tropical abscess, is not easy to explain as being due to portal infection from the bowel, but Rogers states that light is thrown on the process by the occurrence of a somewhat rare intermediate class of case in which there is a rapid formation of large ragged-walled, very acute amoebic abscesses, around which are seen a number of small suppurating points. Sections through the wall show that the latter are formed by the inflammatory process spreading along the veins from the main cavity, and by this means concentric circles of the liver substance are successively broken down, and the abscess enlarges in this manner until, if the patient survives long enough, an inflammatory reaction produces the formation of the limiting fibrous wall which is seen in the typical more chronic abscess. Subsequently the abscess increases in size by expansion, but without further destruction of the liver substance; in this way there may be the formation of a cavity containing six or

more pints of pus without much constitutional disturbance or a dangerous degree of damage to the liver tissues. The difficulty is to explain how a single large abscess originates, but the simplest explanation, according to Rogers, is that during the course of long-continued passage of the amoebae to the liver, most of these undergo degeneration within clots in the portal radicles and fail to get through the walls of the vessels and so start breaking down the liver tissue, but sooner or later localised clotting takes place which is of sufficient extent to produce focal necrosis and escape of the protozoa into the liver tissues; then spread takes place as in the acute form until a reactionary fibrous wall is formed, and a single large localised abscess results.

The statement was made by Rogers and McGaw (1930) that tropical liver abscess only occurred in cases in which the patient has neglected treatment in the pre-suppurative stage. This latter stage is very frequently seen in these islands and it is called a "hepatitis". The disease resolves and does not go to abscess formation if the amoebicidal drugs are used in time in the pre-suppurative stage.

Tropical liver abscess may be single or multiple. Manson (1945) says if multiple, there may be two, three, or many. He says the abscess when single sometimes attains a great size. Frequently it is as large as a coconut, or even larger; the entire liver

even, with the exception of a narrow zone of hepatic tissue, has been converted into a large abscess sac. When multiple, the individual abscesses are generally smaller, ranging from the size of a filbert to that of an orange. This series under review has shown Manson's statement to be true. All but four cases were in the single abscess group, with abscess cavities of varying size. The other four cases formed a group, each with at least two known abscess cavities which were small, being sited laterally in the flank and medially in the epigastrium, of the right liver lobe. In only two cases the abscess formed in the left liver lobe. In both these the abscess was single. One case had a cavity about the size of a grapefruit, found in the left epigastrium. This patient soon afterwards developed a left-sided empyema, and the pus aspirated from the liver abscess and from the empyema were identical. Post-mortem examination revealed a small perforation in the left diaphragm communicating between the liver abscess cavity and the left pleural cavity. There were adhesions between the liver and the diaphragm. The patient was very anaemic and severely debilitated. In the other case, the patient had noticed a painful swelling in the left epigastrium for over three months, and a left shoulder pain for the same duration. She gave a history of treated hepatitis ten months previously, but no former history of dysentery. Examination

showed a large tender swelling in the left epigastrium with the consistency of an abscess and the left liver lobe was enlarged downwards to three fingers below the left costal margin. There was no upward enlargement of the liver and no chest signs. The right lobe showed a downward enlargement to one finger and was slightly tender. There was marked polymorphonuclear leucocytosis, severe anaemia and great debility. An exploratory needle of the left lobe produced half a pint of typical "anchovy sauce" pus.

Another case at autopsy showed a large single abscess which occupied almost the entire right liver lobe. The patient was ill for three-and-a half months and treated himself at home. He had been coughing and expectorating thick reddish pus for eight days. Three days before he came to hospital the cough and expectoration had greatly diminished but the patient noticed his abdomen was enlarging and was becoming painful. There was no history of vomiting and no diarrhoea. On admission the patient was found to have a generalised advanced peritonitis and extreme toxaemia. Laparotomy showed liver pus in the abdominal cavity, which was drained and specific curative treatment instituted. Four days later, per rectum, a localised tenderness was found in the right pelvis. A further laparotomy was performed when a right pelvic abscess was revealed, the pus from this being typical liver abscess pus. The patient showed no improvement and succumbed three days later. Autopsy revealed a

very enlarged liver, the right lobe extending into the pelvis and across the midline beyond the umbilicus. The left lobe showed enlargement extending down to four fingers below the left costal margin. The entire right lobe contained a very large abscess cavity having a thin frail wall of ragged liver tissue. The only liver tissue remaining of the right lobe was found in the right iliac fossa to where the abscess had extended. The point of perforation into the abdominal cavity was found anteriorly about the middle of the abscess cavity. The left lobe showed no abscess. The gall-bladder, pancreas, spleen, and kidneys were normal in size and consistency. The right liver lobe had adhesions to the stomach, adjacent small and large intestines, adjacent parts of the abdominal wall both laterally and posteriorly and also to the diaphragm. There was a right subphrenic amoebic abscess, which communicated with the main abscess. A perforation was found in the right diaphragm. This communicated with the pleural cavity and the subphrenic abscess. This perforation was sufficiently large to admit the little finger. Liver pus was found in the right pleural cavity and also in the lower part of an open bronchus. Scrapings of liver pus from the liver abscess wall showed entamoeba histolytica. The entamoeba histolytica cysts had been found in the stool in the course of routine laboratory examination.

The two autopsies described above revealed that

when a liver abscess extends to the liver surface, adhesions formed with adjacent organs.

At autopsies, intestinal ulceration has been seen to co-exist with liver abscess. This may be extensive or localised to small areas, especially in the region of the caecum, the sigmoid, and the rectum. There may, however, be no visible ulcer lesions of the mucous surface. Sigmoidoscopy has shown healed ulcer lesions in the rectum and lower sigmoid. Amoeboma has been seen in the rectum and colonic flexures and present as an abdominal tumour. They have been felt in the rectum. When such a local mass develops it may be mistaken for malignant disease (Ogilvie, 1945). Hargreaves states that in the colon the differential diagnosis is not possible radiographically, and in the rectum where the tumour can be felt and seen, even when amoebae are found in the stools, a biopsy is indicated to exclude carcinoma, for the two diseases may co-exist (Hargreaves, 1946).

One case of amoeboma of the caecum is here recorded. A man, aged 53, was admitted to hospital in October 1946 with intestinal obstruction. The bowels had not moved for two days and he had vomited twice on the morning of admission. He noticed the bowels had been constipated. He gave a past history of amoebic dysentery four years before, and again at sixteen months, prior to his admission, and he was

treated on both occasions.

Examination revealed a palpable mass in the region of the caecum, which was tender. The abdomen was slightly distended and the tongue coated. Rectal examination gave no information beyond the presence of hard faecal masses. Laparotomy revealed a mass about the size of a plover's egg in the caecum. The appendix was congested. In view of his amoebic history, appendicectomy was performed and scrapings from the appendix mucosa showed the presence of entamoeba histolytica. The abdomen was closed and specific amoebic treatment instituted. After ten days of specific amoebic treatment, which included emetine hydrochloride one grain daily for ten days, the mass was no longer palpable. Follow-up treatment with emetine hydrochloride was given at monthly intervals for two successive months and observation maintained as regards progress. The mass was not again palpable.

The liver pus aspirated has had certain peculiar characteristics. When newly evacuated it is usually viscid and chocolate-coloured, mixed with red blood and yellow mucus, while bile may add to the variety of colours. The pus has a peculiar mousy odour. Being so viscid it is not readily absorbed by dressings. Quoting Manson (1945), it lies on the surface of the gauze like treacle on bread, spreading

out between the skin and the dressing, and finding its way past the edge of the latter rather than penetrating it. In this series many red blood cells have been seen microscopically, together with broken-down liver cells, polymorphonuclear leucocytes, debris, oil globules, haematoidin crystals, large pigmented spherical cells, and amoebae, which were found in 64.55% of smears examined. Cysts of entamoeba histolytica were not found in the liver pus. Pyogenic cocci, including pneumococci and staphylococci, were found in 3.64% of cases in this series. In 35.45% of cases, neither entamoeba histolytica nor pyogenic cocci were found in the pus. Under specific treatment the pus changed its viscid and mucoid characteristics and became more fluid. The quantity also became less.

TABLE 13. ENTAMOEBA HISTOLYTICA IN SMEARS EXAMINED.

Protozoa	Number of cases	Percentages
Present	71	64.55%
Not found	39	35.45%
Total	110	100%

Table 14 shows the concomitant pyogenic cocci found in the smears examined.

TABLE 14. CONCOMITANT PYOGENIC COCCI.

Organisms	Number of cases	Percentages
Pneumococci	2	1.82%
Staphylococci	2	1.82%
Total	4	3.64%

In rare cases the abscess becomes encysted and the pus is creamy and yellow instead of viscid and chocolate-coloured (Manson, 1945). The creamy yellow liver abscess pus has been seen in one case only. A note on this has been made under "Complications and Sequelae". The encysted abscess has been found free from entamoeba and bacteria. Encystment is Nature's method of cure in cases where the causative protozoal organism dies out after a dense fibrous wall has formed around the abscess. Its occurrence shows that this method of cure is quite likely to be obtained through emetine which can kill the entamoeba histolytica in the tissues (Rogers and McGaw, 1930).

Direct infection of the anterior surface of the liver may possibly take place from an amoebic ulcer in the hepatic flexure of the colon, via the peritoneum

(Manson, 1945), but there is no evidence to show that this constitutes the usual method, and autopsies in this series gives no indication whatsoever of this possibility.

Manson (1945) further states that in amoebic hepatitis, which is probably the precursor of amoebic abscess, there appears to be a massive amoebic portal infection. Probably the great majority of the organisms are destroyed by resulting tissue-reaction; the survivors multiply and cause necrosis of the surrounding liver cells and thus constitute the starting point of a liver abscess. Cytolysis is brought about by the rapidly multiplying amoebae; but ultimately the amoebae themselves are destroyed by the products of their own activity. Sterile amoebic abscesses at this stage are particularly liable to secondary infection with pyogenic organisms. As originally pointed out by Councilman and Lafleur (Manson, 1945) the primary lesion is a central necrosis of the liver lobule, a prelude to subsequent abscess formation.

An attempt is made in this text to correlate the three conditions, viz.: amoebic dysentery and two of its complications: amoebic hepatitis and amoebic liver abscess as they exist here. They are caused by the same protozoa, the entamoeba histolytica, which has been frequently identified; they also respond to the same specific treatment in which

the most important drug is emetine hydrochloride. Though some liver abscess cases in this series give a past history of dysentery and even also of recent or co-existing dysentery, and some a history of hepatitis following a recent dysentery, many cases here give no previous history at all of any diarrhoea or dysentery, and some also no history of a previous hepatitis. All, however, give a history of pain in the liver for many days, or some weeks,and even some months, before medical aid was sought (See Table 10).

CLINICAL FEATURES, SYMPTOMS, AND SIGNS.

Early symptoms:- There is a great variety in the symptoms of liver abscess and the early symptoms may be quite misleading as they frequently are obscure. In the very early stage the patient may have a very slight pyrexia or may have no fever at all. There is usually a complaint of a feeling of "heaviness" over the liver, distaste for food, anorexia, flatulence, feeling "out of sorts", and sometimes bowel irregularity. This is followed by general lassitude, lethargy, disinterest in work, sweating, and/in nearly all cases an evening temperature. Then follow the increased feeling of "heaviness" and a sense of "fullness" over the liver and in the hypochondrium and pain is sometimes referred to the infrascapular

region. This is followed by pain over the liver, accentuated by coughing, more sweating, and increased pyrexia.

This sweating is peculiar in that it occurs chiefly in the head and neck regions. It is noticed in 57.27% of the cases.

Shoulder pain: This is found in 82.73% of cases, 80.91% being on the right side and 1.82% on the left, with 17.27% of cases not giving this complaint. This incidence rate is shown in table 15.

TABLE 15. SHOULDER PAIN INCIDENCE RATE.

Sites	Number of cases	Percentages
Right shoulder	89	80.91%
Left shoulder	2	1.82%
No shoulder pain	19	17.27%
Total	110	100%

It appears as a sensation of uneasiness or "rheumatic" pain in the shoulder region, on the right side for the right liver lobe involvement, on the left side for the left liver lobe lesion. The shoulder pain is a referred pain from the diaphragm and is due to the reflex irritation of the phrenic nerve, transmitted through the fourth cervical root, from which the supra-acromial and the supra-clavicular cutaneous nerves originate in the cervical plexus. It is comparable to that of diaphragmatic pleurisy or gall-bladder trouble. The shoulder pain has its importance in that it gives an indication relative to the

location of the abscess cavity, especially where the abscess wall is near the diaphragm.

In those cases where it is present, the shoulder pain appears as an early symptom, and disappears during treatment of the liver abscess.

General features and Course of the Disease: Following upon the early symptoms, the course becomes accentuated in its progress. The pain over the liver area increases. The patient begins to lose flesh and feels weaker. The complexion becomes sallow, muddy, and pale. The pyrexia increases, particularly towards the evening, and rigors may be experienced. The pyrexia now becomes a regular feature, usually intermittent in type, and may reach 102°F. or more in the evening, and dropping towards normal in the morning. Cases with remittent pyrexia are less frequent in this series. The temperature is found to be intermittent in 64.55% of cases, remittent in 25.45%, and apyrexia in 10%. Rigors are seen in 5.45% of cases, and night-sweats in 57.27%, as shown in Tables 16 and 17.

TABLE 16. PYREXIA.

Pyrexia	Number of cases	Percentages
Pyrexia, Intermittent	71	64.55%
Pyrexia, remittent	28	25.45%
Apyrexia	11	10.00%
Total	110	100%

TABLE 17. RIGORS AND NIGHT-SWEATS.

Conditions	Number of cases	Percentages
Rigors	6	5.45%
Night-sweats	63	57.27%

The pyrexial bouts in high fevers are accompanied by profuse sweating which is seen chiefly during the night, necessitating frequent change of clothes. The patient becomes emaciated, the tongue furred, the extremities cold and clammy.

The respiration is shallow and mainly thoracic. Deep breathing increases pain which "catches" the patient's breath, so that the patient is afraid to breathe deeply.

A swelling may appear in the epigastrium or below the rib margin. This swelling is painful and tender. Tenderness is increased on heavy palpation. There is usually oedema and inflammatory discolouration of the skin overlying the swollen area. Some cases show no obvious swelling especially where the abscess cavity lies under cover of the ribs; but generally there is pain, tenderness, and filling of the intercostal spaces, and sometimes also bulging of the overlying ribs and tissues, and thus an asymmetry may be observed between the right and left lower rib regions. This gives the picture of a chest deformity, which may be quite visible, or only slightly visible.

Rigidity of the proximal part of the rectus

abdominis muscle may be noted where the abscess forms or extends anteriorly in or near the epigastrium. In this region the superficial reflex may be diminished or absent.

The abscess cavity may cause the liver to enlarge downwards below the rib margin or upwards against the diaphragm depending upon the site and size of the abscess. A liver enlarging downwards may reach the level of the umbilicus or beyond it; for example in one case, which was confirmed at autopsy, it had extended down into the right pelvis. Similarly a liver may enlarge upwards raising the diaphragm to above its normal level and may cause pneumonic symptoms through compression on the base of the lung. In the Seychelles series 94.54% of the cases are found where the liver enlarges downwards and 28.18% where it enlarges upwards. Basal lung signs are observed in 33.63% of cases, comprising 32.72% over the right base and 0.91% over the left. These incidence rates are shown in tables 18 and 19.

TABLE 18. LIVER ENLARGEMENT.

Enlargement	No. of cases	Percentages
Liver enlarged downwards	104	94.54%
Liver enlarged upwards	31	28.18%

TABLE 19. BASAL LUNG SIGNS.

Lung Signs	No. of cases	Percentages
Lung signs over right base	36	32.72%
Lung signs over left base	1	0.91%

As the condition progresses, the patient becomes more emaciated; high fevers with profuse night-sweats continue; liver dulness, pain, and tenderness increase. Now, however, the general enlargement may stop, and examination, palpation, and percussion may reveal a localised swelling in an upward or downward direction. If at this stage appropriate treatment is neglected, the patient may die from cachexia after months of illness. The abscess must be relieved; otherwise, it may burst into the abdominal cavity,or into the subphrenic region, or into the pleura or lung, or into some other structure such as the stomach, intestine and pericardium, or even through the skin, of which two cases are recorded in this collection. Recovery may ensue or the patient may succumb from continued high fever and exhaustion or from some intercurrent complication.

Blood changes: Pallor of varying degrees is observed, though in most cases it appears markedly as these cases arrive at the hospital in the advanced stage of liver abscess. Microscopic examination of the blood usually shows a secondary anaemia, which occurs to a varying degree depending on the severity and duration of the abscess. Occasionally the blood-changes are so marked as to assume features of pernicious anaemia. Anaemia is found in 78.18% of cases in this series.

There is usually a polymorphonuclear leucocytosis, ranging from 10,000 cells per c.mm. to 32,000 cells or more per c.mm. Leucocytosis is low in the early small abscess cases,but generally it is high in those cases with a large abscess cavity and when the patient has been ill for a long time. Some very few cases, 4.54% , are encountered where leucocytosis is below 10,000 cells per c.mm. Leucocytosis is found in 91.81% of cases in this collection.

Table 20 shows the blood-changes incidence rate found in the Seychelles series.

TABLE 20. BLOOD CHANGES.

Blood changes	No.of cases	Percentages
Polymorphonuclear Leucocytosis	101	91.81%
Secondary Anaemia	86	78.18%

The differential white cell count shows that the polymorphonuclear leucocytes are preponderant ; the lymphocytes, large mononuclears, and eosinophils come next in this order of frequency. An example is quoted from one case as follows:-

Polymorphs 83%; lymphocytes 12½%; large mononuclears 3%; and eosinophils 1½%. These percentages are seen here almost consistently in this proportion, any variation being merely slight, as exemplified from another case as follows:- Polymorphs 78%; lymphocytes 17%; large monocytes 3%; and eosinophils 2%.

Variety in the Symptoms: The foregoing is a record of the common observations in amoebic liver abscess cases encountered in the Seychelles series. There are varieties however. In some instances, the initial symptoms are more urgent and they progress more rapidly, the disease taking on a more rapid course. In some others, subjective symptoms may be almost entirely absent, or so subdued that the condition may be completely misdiagnosed. Provided liver abscess is diagnosed and treated early the chances of cure are favourable and complete recovery ensues. Where the true condition is undetected, the abscess becomes progressively worse and may be really dangerous to the patient's life as it may rupture into a neighbouring structure and cause unforeseen complications, or it may be discovered only at autopsy,

In some cases, the initial fever may be as high as 103°F. or higher, and persists for several days, but later it becomes intermittent or remittent. Some of the cardinal symptoms and signs may be absent, and thus become misleading from an accurate diagnosis. An abscess cavity may be present in the liver but may be misdiagnosed. Pyrexia and shoulder pain may be absent and the patient may give no previous history whatsoever of amoebic dysentery or diarrhoea.

Respiratory System: In liver abscess the respiration is generally shallow and thoracic, and it is accompanied by pain in the abscess area where the abscess

wall is near the diaphragm, due to the friction on the hepatico-diaphragmatic surface and also quite possibly some inflammatory adhesions. Because of this pain the patient is afraid to breathe deeply for fear lest deep breathing increases pain. In such instances, percussion may show an increased liver dullness upwards and auscultation may reveal signs of friction rub or crepitations or basal pneumonic evidences on the side of the lesion. An inflammation in the diaphragmatic region may cause a painful cough due to a reflex irritation of the diaphragm. The friction rub may be peritoneal or pleuritic depending on the extent of the inflammation. Pneumonic signs indicate the contiguity of the liver abscess to the diaphragm. The compression signs at the base of the lung result from the upward enlargement of the liver abscess, and they may be detected at the base of the lung on the side of the lesion as crepitations, which are inspiratory and sometimes expiratory as well, and also decreased breath-sounds, and diminished vocal fremitus.

Similarly lung signs may be present where a liver abscess in bursting upwards forms a subphrenic abscess. A passage may be made in the diaphragm resulting in the escape of liver pus into the pleural cavity. This pus in turn may burst into a bronchus and eventually expectorated. The pus is usually characteristically chocolate-brown and particularly

viscid. It may however be mixed with traces of bright red blood and this may well be mistaken for a haemoptysis of pulmonary tuberculosis. A chronic basal condition may develop with clubbing of the fingers, and this may be mistaken for some such chronic condition as carcinoma or tuberculosis. The clubbing of the fingers is seen in only two cases in this series. Both cases had a protracted illness of over three months before admission to hospital.

The cessation of the cough and of the expectoration of the liver pus may give the false indication that no more pus remains in the liver abscess cavity. This arrest may nevertheless be followed by a rise of temperature and reappearance of night-sweats and possibly shoulder pain and the beginning of another attack of liver abscess. The alternate emptying and refilling of the same abscess cavity may recur in this manner many times before final recovery takes place. The expectoration of the liver pus is seen in 20% of cases in this series. All recovered except one, which has been reported upon in an autopsy recorded under "Pathology" in this thesis. That autopsy showed the converse possibility in which the liver abscess caused another complication by rupturing into the abdomen, thus arresting the expectoration of liver pus.

Alimentary System and the Stools: The tongue is generally furred. The furring spreads all over the superior surface of the tongue. The amount of furring appears to indicate the severity of the liver damage, for it is observed in these cases that the larger the abscess cavity and the longer its duration, the greater is the furring intensity. The digestion is disturbed and the patient generally complains of anorexia, flatulence, a feeling of "fullness in the stomach", and no desire for food. Fluids are taken in small quantities and foods do not have the right taste.

The bowel action is noted to vary in different patients, ranging from one to five times in twenty-four hours, but once or twice daily is the usual average. Rarely is a case of constipation encountered.

As already recorded in Table 2, the tenderness over the caecum and sigmoid is found in 35.46% of cases. Of this percentage the former is more frequent, with 24.55%, the latter with 10.91%.

The routine laboratory microscopic examination of the faeces reveals the presence of entamoeba histolytica in 10.91% of cases, entamoeba histolytica cysts in 18.18%, the active protozoal entamoeba and entamoebic cysts together in 3.64%, and Charcot-Leyden crystals in 5.45% of cases. The presence of Charcot-Leyden crystals though suggestive, is not diagnostic. These percentages are quoted in Table 11 under "Etiology".

Jaundice: Severe jaundice has not been seen in this series but slight sclerotic jaundice was observed in 6.36% of cases. The icterus always disappeared during the liver abscess treatment.

Spleen: No splenomegaly was found at all, and there was no tenderness over the spleen. At autopsies the spleen showed no change in size, shape, and consistency.

Pancreas: As revealed at autopsies, the pancreas showed no pathological changes.

Kidneys and the Urine: The kidneys were not enlarged or tender. They appeared normal.

The urine contained albumin in 46.36% of cases. This might be the result of a toxic absorption from the abscess cavity and subsequent toxic irritation of the renal filters. The albumin rapidly disappeared during the liver abscess treatment.

The urine emitted strong odour of ammonia, especially in cases with the large abscess cavity. This might result from the extent of destruction of the liver substance. Improvement followed the treatment of the liver abscess.

Bile salts were present in 10.91% of cases, and always in only minute quantities, which disappeared with the treatment.

The findings are shown in Table 21.

TABLE 21. Urinary Abnormalities.

Abnormalities	Number of cases	Percentages
Albumin	51	46.36%
Bile salts	12	10.91%

Skin: The skin was generally pale, sallow, drawn and dry, giving a toxic and haggard appearance. This appearance was more marked in the more severe cases. Improvement was rapid with the abscess treatment.

Nervous System: Generally the patients were irritable and uneasy. During the first two or three days of treatment they were usually restless and had disturbed nights.

Headaches were common where the pyrexia was high, and this was generally observed in those cases where the temperature registered 102°F. or more.

Generalised body-aches and pains were recorded in 19% of cases. These generally showed a temperature of over 102°F.

Delirium was not encountered in the Seychelles series.

Rigors were observed in 5.45% of cases.

Night-sweats were seen in 57.27% of cases, the main distribution being in the region of the head, neck, and shoulders. Some cases showed profuse sweating which necessitated frequent changes of clothes.

Shoulder pain was noted in 82.73%, of which 80.91% was referred to the right shoulder and only 1.82% to the left.

The pain referred to the infra-scapular region was notably scarce, occurring in only 2.72% of cases, all on the right side.

Rigidity of the proximal part of the rectus abdominis muscle was observed in 73%, showing this rigidity to be frequent.

The reflex jerks on the various parts of the body show no obvious departure from the normal, except that in those cases where the rigidity of the proximal part of the rectus muscle existed, the superficial reflex was either diminished or absent.

Giddiness occurred in some cases and it was generally associated with extreme asthenia, debility, and emaciation.

Cardio-vascular System: The pulse rate usually followed the rise and fall in temperature although at times it was less than would be expected from the temperature. The poor volume of the pulse was observed in a large number of cases who had been ill a long time and had a large abscess cavity and considerable anaemia.

Epistaxis and haematemesis were not encountered, and no real haemoptysis was seen. No obvious melaena occurred though erythrocytes were seen in

some cases which also showed active entamoeba histolytica in the stool.

In only one case was the heart displaced from its normal position and this was due to the pressure upwards of the abscess that involved the left liver lobe and a corresponding upward and outward displacement of the heart. Later, in the same case, when an empyema formed in the left pleural cavity, the heart was displaced inwards and medially and came down to its normal level. The displacement remained until the empyema was aspirated thus relieving the compression on the left border of the heart and the apex returned to its normal position.

Haemic systolic pulmonary murmur was detected in few cases associated with severe anaemia.

No arteriosclerosis of the vessels was found associated with these liver abscess cases.

The blood-pressure, both systolic and diastolic, was generally lower than normal, the average cases ranging between 102 and 112 mm. Hg. systolic and 62. to 74 mm Hg. diastolic.

The eyes, ears, nose and throat: Apart from the icteric tingeing of the sclera found in 6.36% of cases, there was no departure from the normal in these organs.

COMPLICATIONS AND SEQUELAE.

Many possible varieties of complications and sequelae may be encountered in tropical liver abscess cases. Spontaneous rupture occurred in 29.99% of cases in this series, and comprised the following percentages of incidence rate shown in Table 22.

TABLE 22. SPONTANEOUS RUPTURE.

Spontaneous rupture	No. of cases	Percentages
Rupture into abdomen causing peritonitis	5	4.54%
Expectoration through lung	22	20.00%
Rupture through the skin	2	1.82%
Rupture into pleura causing empyema	4	3.63%
Total	33	29.99%

One case of encysted liver abscess was seen in this series. This case is reported under "Clinical Memoranda".

MORTALITY.

Though the case mortality from tropical liver abscess has been claimed to be high by some observers, the Seychelles series shows the mortality-rate to be low.

Manson (1945) stated that formerly the case mortality was 50%-80%, but at the present day improved methods of treatment have brought the mortality-rate to practically nil.

Rogers and McGaw (1930) stated that under the obsolete open operation in damp tropical countries the mortality in 2261 cases in the British Army in India was 56.7% although the patients were under

skilled treatment from the beginning, and in 231 Calcutta cases it was 60%. This high mortality was mainly due to secondary septic infection, which was almost inevitable in large amoebic liver abscesses opened in hot moist climates owing to air being sucked in and out of the wound at every breath during the frequent dressings required.

The conservative method of curative treatment introduced by Leonard Rogers in 1912 showed a very remarkable reduction of the mortality-rate. Thus, again quoting Rogers and McGaw (1930) in 111 cases collected in Bengal by the writers, the mortality was only 14.4%, or one-fourth of the former rate, and this figure included many very bad cases which would have been considered hopeless in the days of the open operation.

Later still, K.K. Chatterjji of Calcutta, in 1922 (Rogers 1929), recorded 186 cases treated by the conservative curative method with a mortality of only 1.6%; and A.L. Ludlow in Korea, in 1926 (Rogers 1929), treated 50 cases with 2% mortality, showing a large reduction to about one-thirtieth of the former open curative mortality-rate in the tropics. Ludlow, however, had previously had a death-rate of 11.1% in 117 open operation cases although he worked in the better climate of Korea.

The mortality rate in the Seychelles series of 110 cases was 6.36%, covering the nine-year period

between 1938 and 1946 inclusive. The figures are shown in Table 23.

TABLE 23. MORTALITY-RATE DURING NINE-YEAR PERIOD.

Year	Liver Abscess	Cured	Died
1938	6	5	1
1939	0	0	0
1940	4	4	0
1941	11	11	0
1942	10	10	0
1943	17	16	1
1944	24	22	2
1945	10	9	1
1946	28	26	2
Total	110	103	7

Percentage cured 93.64%
Percentage died 6.36%

The great majority of cases in the Seychelles series were very advanced, critically ill, extremely emaciated and severely debilitated. The mortality cases included those who came to hospital much too late to benefit the curative treatment, and among them could be mentioned those who developed such complications as ruptured liver abscess into the abdomen and rupture into the pleural cavity, and their general condition was so advanced and so bad as to render the prognosis most unfavourable.

BACTERIOLOGY.

The entamoeba histolytica is an actively moving amoeba when alive and possesses active phagocytic tissue-dissolving powers, and it is frequently found to contain one, two, or more ingested red blood corpuscles. These properties distinguish the entamoeba histolytica from the harmless non-pathogenic entamoeba coli.

The cystic form of entamoeba histolytica occurs in the resting stage and may persist for long periods. The cystic forms are spherical retractile bodies containing four nuclei and frequently chromidial bars may also be seen. They must be distinguished from the entamoeba coli cysts which are usually oval and may contain up to eight nuclei.

DIAGNOSIS AND DIFFERENTIAL DIAGNOSIS.

The diagnosis of liver abscess is often difficult and misleading especially in those cases where the /and
symptoms/signs are obscure. The possibility of the presence of an amoebic hepatic abscess should be considered when a person, who has been in the tropics, suffers from a progressive deterioration in health together with pyrexia and accompanied by rigors and sweats. There may or may not be a past history of amoebic dysentery. There may be a past history of

diarrhoea with abdominal discomfort, flatulence, colic, and tenesmus, which may or may not have been treated. The duration of residence in the tropics affords no criterion of the liability of contracting amoebic dysentery. Whether the duration of residence be short or long it gives no exemption, though in great probability a long residence renders the individual more open to the infection. Doubtless also the mode of living and the sanitary care over the food and water play an important rôle in prophylaxis. Negligence in prophylaxis, careless mode of living, over-indulgence in alcohol and over-eating are predisposing factors.

Since the diagnosis of liver abscess is by no means easy, mistakes are often made, the condition being misunderstood for some other disease. A history of amoebic dysentery or an undiagnosed diarrhoea in the tropics, the presence of clinical pictures of sepsis such as rigors, sweats, and pyrexia, the evidence of a hepatic involvement such as pain and tenderness over the liver, and a hepatic enlargement, constitute the four most significant signs in amoebic liver abscess cases. However, many cases present a quite obvious picture of liver abscess, especially where there is a bulging or where the abscess points in the hepatic region, in the epigastrium, or below the rib margin, which factors may be associated with a hepatic enlargement. Basal pneumonic signs on the side of the hepatic lesion may be misleading but where

this occurs in those cases presenting signs of a liver involvement, a liver abscess should be suspected. A careful history should be sought and a careful examination made. The faeces should be examined for the presence of any entamoeba histolytica or entamoeba histolytica cysts. Sigmoidoscopy should be done for any evidence of an amoebic ulcer or healed ulcer lesion. The blood should be examined for any polymorphonuclear leucocytosis and secondary anaemia which is invariably present, and a differential white cell count made. The blood Wassermann or Kahn reaction should be performed to eliminate the possibility of a suppurating gumma in the liver. Radioscopy and radiography could be carried out, but neither would give a full-proof benefit as the abscess shadow and the liver shadow usually intermingle and form a more or less homogeneous density. An exception in radioscopy gives benefit in cases where the liver abscess bulges up against the diaphragm thus giving to the latter a dome-like appearance, and in radiography where air has entered or is made to enter the abscess cavity or where the abscess has become encysted or calcified. The urine analysis may or may not show the presence of albumin and bile salts.

The diagnosis is simplified when expectoration of the characteristic "anchovy" liver pus occurs in those cases which give signs of a hepatic involvement. Similarly the correct diagnosis is indicated in those

cases of peritonitis where the typical anchovy pus from a ruptured liver abscess is found at laparotomy.

In order to confirm the diagnosis of liver abscess, a diagnostic aspiration should be performed in those cases which showed no outward sign of anchovy pus, such as seen in an expectoration or a laparotomy or a rupture through the skin or vomiting or evacuated per rectum. An aspiration of the typical anchovy-coloured liver pus from the abscess cavity and the microscopic discovery of the entamoeba histolytica in the smears of pus aspirated from the abscess wall or from the thick debris, make the diagnosis of amoebic liver abscess quite certain.

Diagnostic puncture must be performed very carefully as carelessness involves some risk of haemorrhage, sepsis, and peritonitis. The skin area should be anaesthetised with a local anaesthesia, such as Novocaine or Novutox, and be rendered surgically sterile.

Liver abscess must be differentiated from many conditions, such as malaria, suppurating hydatid of the liver, suppurating actinomycosis and suppurating gumma of the liver, amoebic hepatitis, and many others. At least twenty-six conditions are recorded here and will be mentioned briefly :

1. Malaria is differentiated by blood examination for malarial parasite, the leucocyte count showing a relative leucopenia with a mononucleosis up to 15%-20%, and the response to quinine therapy.

2. Suppurating hydatid cyst of the liver by the history, the presence of eosinophilia, a positive complement-deviation reaction, the exploratory puncture to identify the scoleces and hooks,and the skin test with the specific echinococcus antigen.

3. Suppurating actinomycosis by the history and the recognition of the typical "sulphur granules" of the fungus in the pus.

4. Necrosed suppurating gumma by the history, the Wassermann or Kahn reaction, and the response to the iodide medication.

5. Amoebic hepatitis by the history of amoebic dysentery, the recognition of the entamoeba histolytica or its cysts in the stools, and the response to emetine therapy combined with an amoebicidal drug administered orally or rectally.

6. Acute pylephlebitis by the history,the hectic fever, severe pain over the liver, jaundice not usually present, and bile being found in the urine.

7. Suppurative cholecystitis by the history, symptoms and signs, and the aid of a Cholecystogram.

8. Suppurative cholelithiasis by the history, symptoms and signs, and the Cholecystogram.

9. Suppurative cholangitis by the history and some other concurrent suppurative lesion in the vicinity of the liver.

10. Subphrenic abscess by the history, radiographic examination, and exploratory puncture.

11. Pleurisy by the history, physical signs and etiology and the recognition of the causative factor, such as tuberculosis.

12. Pneumonia or broncho-pneumonia by the history, physical signs, high polymorphonuclear leucocytosis, expectoration of the characteristic rusty sputum, and the response to Sulphonamide or penicillin therapy.

13. Encysted empyema by the history, physical signs, radiographic examination, diagnostic aspiration, and the response to sulphonamide or penicillin administration or surgical treatment.

14. Tuberculosis by the history, physical signs, radiographic examination, and the identification of the tubercle bacillus.

15. Traumatism by the history of an injury which may result from an accident or a stab wound or punctured wound in which bacteria are introduced directly from without, and which also may be due to pyogenic organisms coming from infections elsewhere in the body.

16. Ulcerative endocarditis by the history, physical signs, blood culture, and septic emboli reaching the liver.

17. Trypanosomiasis by the history, symptoms and signs, enlarged cervical glands, blood examination, and response to specific drug therapy such as antrypol or tryparsamide.

18. Bilharziasis by the history, symptoms and signs, identification of the bilharzia in the urine or the faeces, and the response to specific antimony therapy such as tartar-emetic and fouadin.

19. Kala-azar by the history, symptoms and signs, marked splenomegaly, blood examination for the Leishmania organism, anaemia and leucopenia, relative large mononuclear leucocytosis, enlarged lymph glands, and the response to specific antimony therapy such as Urea-stibamine, Fouadin, and Sodium Antimony Tartrate.

20. Undulent fever by the history, symptoms and signs, characteristic undulating temperature curve, and the identification of the brucella organism in the blood.

21. Malignant disease primarily in the liver or secondarily from a primary lesion elsewhere in the body, may cause an obscure pyrexia and jaundice together with cachexia, debility and emaciation.

22. Abscess of the abdominal or thoracic wall overlying the hepatic region with the clinical picture of sepsis, pyrexia and debility.

23. Appendicitis presenting symptoms simulating a hepatic involvement, with, in addition, pain, tenderness and rigidity in the right iliac fossa. Out of eight cases encountered here, seven cases cleared up completely after appendectomy while only one remained as a true hepatic patient. In all these cases the appendix was long and retro-

caecal and reached up to the hepatic region.

24. Appendix abscess with symptoms resembling a liver involvement and revealed at laparotomy to form in the region of the liver from a ruptured gangrenous tip of a long retro-caecal appendicitis. Two such cases were encountered.

25. Pyelitis of the right kidney may be differentiated by the history, symptoms and signs, urine analysis and microscopic examination of the centrifuged urine.

26. Scurvy and similar blood diseases associated with liver enlargement such as leukaemia and leucocythemia by the history, symptoms and signs, and blood examinations.

PROGNOSIS.

This is always good when liver abscess is diagnosed early and specific treatment is given immediately, especially in the single abscess cases. The prognosis is shown to be favourable in this series even in those many cases which seemed fatal from the start as they arrived at the hospital in the very advanced stage. It would seem that where two or more abscesses occur in the liver the prognosis is less favourable, but in this respect four cases were encountered in the Seychelles series and all four survived and recovered. Reference has been made to

this in the chapter on "pathology".

The prognosis has been good here in those cases of peritonitis due to ruptured liver abscess which necessitated a laparotomy and it has been good also in those liver abscess cases where the entamoeba histolytica and its cysts have been identified in the faeces.

Severe toxaemia, anaemia, debility, and emaciation made the prognosis most unfavourable especially when associated with such a serious complication as advanced peritonitis, subphrenic abscess, empyema,or myocardial failure. Even under such conditions most cases have been saved.

Very large liver abscess cases render prognosis unfavourable, necessitating several aspirations and yielding large quantities of pus, which totals three to four pints or more. These are slow in healing and convalescence is tedious.

Among Europeans the question of return to the tropics after recovery from liver abscess may arise. It requires careful consideration, thorough overhaul, and sound advice. In examination special attention should be paid to the state of the liver,the intestinal tract, the cardio-vascular system, and the respiratory system. The liver should be healthy and normal, and the appetite and digestion good. The intestine should have no lesion, and there should be neither pain nor tenderness over the caecum and sigmoid. Sigmoidoscopy should show no active ulceration

in the rectum or sigmoid. Repeated examination of the faeces should show no entamoeba histolytica or entamoeba histolytica cysts or Charcot-Leyden crystals, which though not diagnostic are suggestive of an association with amoebiasis. The heart should be normal and the blood pressure within the normal average. The lungs and pleura should be normal and show no basal evidence of any latent amoebiasis.

Wherever feasible the patient should be advised not to return to the tropics but to remain in a temperate and healthy climate. If the patient is obliged to return to the tropics, the risks of the condition and dangers to his health should be explained, and advice given concerning careful mode of life, prophylactic care over food and water,and avoidance of alcoholic over-indulgence.

Negligence may lead to reinfection and recurrence which may be much worse than the first.

The indigenous patient, however, has his home where he lives. To go to live in a temperate and healthy climate is impossible for him, since his home is in the tropics. Usually he is poor as he probably belongs to the labouring class. The more wealthy individual perhaps may be able to follow the advice to migrate to a temperate climate. But his heart is in his home and his country appeals more to him than any other. He may possibly move to the hill where the air is cooler, fresher,and more bracing; but he will remain on his tropical native soil.

TREATMENT.

The ideal essence of treatment is primarily to effect a complete cure for amoebic dysentery. This should be the main object in the curative treatment in order to prevent any possible onset of such complications as amoebic hepatitis and amoebic liver abscess.

The treatment for amoebic dysentery should be effective and the condition be completely eliminated from the patient. Treatment must be correct and adequate, and persistence maintained until the stools are free from the entamoeba histolytica and entamoebe histolytica cysts. Though some patients are resistent to treatment, perseverance is needed to overcome this obstacle and treatment must be continued until the stools are free from the protozoa and their cysts. Inadequate and incorrect treatment and lack of persistence in effecting a complete cure offer an open door to chronicity and complications.

The treatment for amoebic hepatitis requires similar thoroughness. It must be correct and adequate.

The large number of amoebic liver abscess cases found in this series was due, not necessarily to any professional lack of care and persistence or to incorrect or inadequate treatment of amoebic dysentery, but essentially to negligence and ignorance on the part of the patients who either had no treatment

whatsoever or else resorted to their own native remedies to arrest their dysenteric symptoms, and finally sought medical aid when their native remedies had failed and they had become victims of a grave illness which they could not overcome.

The old treatment by open surgical drainage of the amoebic liver abscess via the transperitoneal and the transpleural routes has been avoided in this series as this method has few remaining advocates. It unnecessarily opens a door to infection from without and any subsequent sepsis which may supervene may be very difficult to eradicate and may result in an increased mortality rate. Another danger is haemorrhage within the abscess cavity which may be very difficult to arrest and death may ensue.

In a small number of cases, 6.37%, treated in this series, a small drainage was made from the abscess cavity where the abscess presented in the epigastrium. It was found that though these abscesses were small, healing was retarded.

One case which was treated in 1946 had actually re-formed pus.

The method of treatment practised in the majority of cases in this collection is the method of conservative aspiration of the liver pus combined with emetine and another amoebicidal drug such as yatren (or chiniofon), or stovarsol. In those cases (4.54% of the total) of peritonitis due to

ruptured liver abscess, where drainage is established following a laparotomy, the administration of emetine and one of the drugs just mentioned is the treatment adopted.

Aspiration is performed under local novocaine or novutox anaesthesia. A large-bore aspiration needle is used. Aspiration often needs to be repeated, up to as many as six or eight times in some cases, until the abscess is healed. One case in particular needed ten aspirations. See Case 18 under "Clinical Memoranda".

Emetine hydrochloride is administered by deep subcutaneous injection in doses varying according to the age and general condition of the patient, and is given up to a maximum of ten daily injections. The maximum total dose of emetine administered to an adult in ten daily injections is usually ten grains.

The injection of emetine hydrochloride into the abscess cavity has been done in twelve cases in this series, emetine in solution being injected into the abscess cavity immediately after aspirating the liver pus. This was given in conjunction with the subcutaneous administration of emetine combined with yatren, (or chiniofon), or stovarsol orally. Any better efficacy of this practice is doubtful because firstly, this minute quantity is injected into the abscess cavity only after an aspiration which is not done regularly every day on any one patient but rather at intervals of two, three, four, or more days according

to how soon the cavity fills up again; and secondly, any liver pus remaining in the abscess cavity after an aspiration would immediately absorb the minute quantity of emetine injected into it as it lies in the postural floor of the cavity. As the daily hypodermic administration of emetine ensures a regular supply of the drug to kill the amoebae in the tissues, it would appear to be the more efficacious method. This practice was abandoned because the twelve cases thus treated showed no greater or more rapid improvement than those majority of cases which had no emetine injected into the abscess cavity.

The best results were obtained through the direct method of aspiration of the liver pus combined with the hypodermic injection of emetine and the oral administration of yatren,(or chiniofon), or stovarsol.

Because emetine-bismuth-iodide was observed firstly to have some drastic and revolting effects in the treatment of amoebiasis; secondly, to show drastic effects on the only three liver abscess cases on whom it was used; and thirdly, the patients generally were weak, debilitated, extremely ill, and in too poor a condition to tolerate much drastic effect, any extensive use of this drug was avoided. Drugs with less drastic or negligible reactions, than that mentioned, were used with satisfactory results.

Cases of expectoration of the liver pus, being 20% in this series, did well on emetine hydrochloride by subcutaneous injection and on yatren, (or chiniofon)

or stovarsol orally. By this conservative method all such cases treated in the hospital were cured. The only exception was the autopsy case reported earlier in this text under "Pathology". This patient was coughing and expectorating liver pus for eight days before he came to hospital, was in a state of advanced generalised peritonitis with extreme toxaemia, and necessitated two laparotomies.

It has been found that the direct curative treatment caused the entamoeba histolytica to disappear rapidly from the liver lesion and the amoebae and cysts to be quickly eradicated from the intestinal lesions. It has been possible to make this statement since methodical progress on the cases has been well maintained and closely followed up through all the stages during treatment.

In convalescence, iron tonic mixtures were given in large doses together with glucose and vitamins especially vitamin B_1. The patient was put on a high caloric diet, especially high in proteins. Patients made rapid convalescence on this regime and quickly regainedhealth and strength.

A follow-up system was established in order to observe progress. The patient reported back one month, and then again at two months, after the start of treatment. On each occasion he was given a thorough physical examination and the urine and at least three stools were examined. Also in order to leave no loophole which might lead to a recurrence of the liver

abscess the patient was given eight days of emetine hydrochloride subcutaneously and one of the above-mentioned drugs orally. This practice ensured the complete elimination of the entamoeba and cysts from the body.

No recurrence was encountered through this method except in two cases which have been recorded. One was a case of encysted liver abscess that was found one week after the tenth and last day of the first course of treatment for amoebic liver abscess. Proper and adequate treatment was given in this case and the patient made a complete and uninterrupted recovery. The other was a case that was found one month later to have re-formed about 90 c.cs. of fluid liver pus which was withdrawn by aspiration. This case made a complete recovery on the specific curative treatment.

It is of utmost importance that the patient be given complete rest during the period of administration of emetine hydrochloride and be watched for any evidence of toxic symptoms.

Young children are susceptible to emetine toxicity and in them a toxic symptom occurs rapidly. Adults also may show toxic symptoms especially those with a cardiac involvement and these must be watched with great care.

Toxic symptoms varied and were found in only few patients, as shown in Table 24. Cases of

extrasystoles and of auricular fibrillation have been seen. Neuritis, or more correctly a peripheral palsy, has occurred. Fine brawny desquamation of the skin has been recorded. Atrophic fingernails with increase in the size of the lunule have been observed.

TABLE 24. EMETINE TOXICITY INCIDENCE.

Toxic Symptoms	Number of cases	Percentages
Extrasystoles	4	3.63%
Auricular Fibrillation	2	1.81%
Peripheral Palsy	3	2.72%
Skin desquamation	4	3.63%
Atropic fingernails and increased lunule	2	1.81%
Total	15	13.6%

When a toxic symptom occurred it was imperative to stop the administration of emetine until the condition returned to normal. Emetine could then be resumed but given only in smaller doses and the patient watched most carefully.

Drugs such as yatrem, (or chiniofon), and stovarsol have been well tolerated and have given good results. They were administered orally. No case in this series necessitated receiving a drug as a retention enema. The stools generally were free from the entamoeba histolytica after four or five days of treatment, and from the amoebic cysts after six or seven days of treatment. This was confirmed by repeated stool examinations.

In the small 9.09% of cases, where repeated stool examinations showed no protozoa or cysts,

emetine was administered alone uncombined with oral drugs and it yielded good results. No relapses occurred.

The blood Kahn reaction was performed on all liver abscess cases. This series showed 10.91% as Kahn Positive cases (K.R. Strong Positive +++) and 88.18% as Kahn Negative cases (K.R. Negative +), with one case 0.91% doubtful. The specific syphilitic treatment was given to the Kahn Positive cases after they were discharged, completely cured from liver abscess.

Syphilis might well be regarded as concurrent infection and it would have no bearing whatsoever on the incidence of amoebic liver abscess beyond the fact that the tissue vitality might be lowered by the concurrent tertiary syphilis, but it had no causative factor on the formation of the liver abscess where the causative protozoa, the Entamoeba Histolytica, was actually found. Table 25 shows the Syphilis incidence rate in the Seychelles liver abscess cases.

TABLE 25. SYPHILIS IN SEYCHELLES LIVER ABSCESS CASES.

Kahn Reaction	Number of cases	Percentages
Positive	12	10.91%
Negative	97	88.18%
Doubtful	1	0.91%
Total	110	100%

Table 26 shows the drugs used in the treatment of liver abscess and the number of cases treated with each drug in this series.

TABLE 26. DRUGS USED AND PERCENTAGES.

Drugs	Number of cases		Percentages	
Emetine	110		100%	
Yatren		37		33.64%
Stovarsol		15		13.64%
Chiniofon		45		40.91%
E.B.I.		3		2.72%
no oral drug		10		9.09%
Total	110	110	100%	100%

Emetine hydrochloride was given to all the liver abscess cases and it was usually combined with one of the oral drugs shown in Table 26.

Giardia Lamblia was discovered in two cases and this was treated with quinacrine: this flagellate disappeared completely on a five days' treatment with the dosage of one tablet three times a day after meals, the results being confirmed by repeated stool examinations.

Balatidium Coli was identified in two cases. One case was given stovarsol orally, one tablet three times a day after meals for six days. The other case was treated on adult acetylarsan by intramuscular injection, in dosage of 3 ccs. at three days' interval for four injections. Fortunately both cases had a mild infection and recovered quickly on these methods of treatment, the results being confirmed by repeated stool examinations and sigmoidoscopy.

Penicillin was used on fourteen liver abscess cases but it gave no appreciable result whatsoever on the amoebae.

It gave most excellent results in destroying pyogenic organisms present in the liver abscess and that these organisms disappeared very rapidly was confirmed by repeated microscopic examinations of the liver pus.

Pneumococci were found in two cases and Staphylococci in two other cases. In all four cases the pus was taken under strict asepsis directly from the abscess cavity exposed at a laparotomy for peritonitis due to ruptured liver abscess. It was definitely ascertained that in these cases no direct communication existed between the abscess cavity and the lung or bronchus. Penicillin was administered intramuscularly in doses of 20,000 Units or 30,000 Units every three hours up to a total of 200,000 to 500,000 Units.

Penicillin was given to five cases of expectoration of liver pus in addition to emetine combined with an oral amoebicidal drug. It exerted no action on the liver pus or the amoeba, and appeared to give no valuable effect whatsoever.

Penicillin was used on two cases of aspiration of liver abscess and also on two cases of incision and drainage of liver abscess which were sited in the right epigastrium.

Observations on the experimental value of Penicillin in the treatment of amoebic liver abscess gave disappointing results. Penicillin exerted no beneficial value whatsoever.

TABLE 27. PENICILLIN ON LIVER ABSCESS CASES.

Varieties	No. of cases.
Laparotomy due to ruptured liver abscess	5
Expectoration of liver pus	5
Aspiration of liver abscess	2
Incision and Drainage of Abscess in Epigastrium	2
Total	14

Sulphonamide preparations were tried but they had no beneficial value on amoebic liver abscesses.

Table 28 gives the varieties of sulphonamides used and the number of amoebic liver abscess cases on which they were used.

TABLE 28. SULPHONAMIDES AND LIVER ABSCESS CASES.

Drug Varieties	Number of cases
Sulphapyridine	14
Sulphathiazole	2
Dagenan-Sodium	2
Sulphanilamide	4
Proseptasine	2
Soluseptasine	2
Total	26

CLINICAL MEMORANDA.

CLINICAL MEMORANDA.

A clinical history is recorded herewith on some varieties of cases treated in this series and quoted in this thesis.

A. Emetine without aspiration: Treatment by this method covers a small group, forming 10.91% of cases. They are early suppurative cases and the abscess is in the commencing stage and diminutive in size. Any attempt at an aspiration might have inflicted more harm than good on the liver.

Case 1. A girl, aged 19, was admitted to hospital on 18/12/43 with a right diaphragmatic pleurisy and a productive cough, of eight days' duration. She had a right shoulder pain but no tenderness over the liver. The tongue was furred. The sputum contained no liver pus and showed no tubercle bacillus, but presented a mixed infection consisting of pneumococci, staphylococci and streptococci and a considerable quantity of pus cells. Blood examination showed a mild polymorphonuclear leucocytosis and no appreciable anaemia. The stools showed no entamoeba histolytica or cysts. The blood Kahn reaction was negative. She gave no past history of amoebic dysentery or hepatitis. She had night sweats, an evening rise of temperature and a remittent fever, but no rigors. Clinically no evidence of tuberculosis could be detected.

leyden crystals were found in the stool. The urine contained albumin but no bile. Blood Kahn reaction was negative. Blood examination showed polymorphonuclear leucocytosis and secondary anaemia. The pyrexia was remittent.

He was given hypodermic emetine hydrochloride, one grain daily for ten days, combined with oral yatren one tablet t.d.s. p.c. for ten days. The pyrexia gradually subsided and was normal on the fifth day. The stools were free from cysts and charcot-leyden crystals on the sixth, the seventh and subsequent days. The slight bulging disappeared and the liver returned to normal. The patient was discharged on 20/6/44. Follow-up progress showed no recurrences.

B. Emetine and Burst Liver Abscess through the skin:

Only two cases, comprising 1.82% in the series, are encountered in this group. One case is recorded herewith.

Case 3: A man, aged 39, a habitual drinker, was admitted to hospital on 6/2/44 with a wound in the right hypochondrium of four days' duration. He had had diarrhoea about one year before and had treated himself at home, and twice afterwards for which he had also treated himself at home. He had begun to feel a pain in the liver region more than one month before he came to hospital. The pain became gradually worse. He had fever, shivers, and night-sweats. He lost appetite. He was bad-tempered and irritable.

He had noticed a swelling in the right hypochondrium about three weeks before but had paid no attention to it. The swelling burst four days before admission and thick reddish pus had exuded. His relatives and neighbours told him to go and see a doctor, and they brought him to the hospital.

The pus from his wound was typically amoebic anchovy liver pus. Pus smears showed no organism and no entamoeba, but scrapings from the abscess wall showed the presence of entamoeba histolytica. The stools showed entamoeba histolytica cysts. The urine showed no albumin and no bile. Blood Kahn reaction was negative. Blood examination showed polymorphonuclear leucocytosis and secondary anaemia.

Treatment consisted of hypodermic emetine hydrochloride, one grain daily for ten days, combined with oral yatren, one tablet t.d.c. p.c. for ten days. Local treatment of the wound was simple and done with care to avoid introducing sepsis or causing ahaemorrhage. The wound was washed out with warm normal saline solution and followed by the application of hot boracic fomentation. This procedure was repeated four times a day.

He made an uneventful recovery and was discharged from hospital on 16/2/44. Follow-up progress showed no recurrences.

C. Emetine combined with Aspiration: This method was used on the majority of cases in the series, comprising 56.36% and gave the best results.

Four cases are illustrated hereunder. The oral drug was withheld from some cases which showed no entamoeba histolytica or cyst in their stools. In comparison with those cases which were given the oral drug, although the stools were free from the protozoa or cysts, the benefit obtained from the use of the oral drug was no more outstanding than from its non-use. In those cases where the protozoa or cysts were present in the stool the oral drug gave undoubted benefit.

Case 4 : A male European descendant, aged 30, was admitted to hospital on 25/12/42, complaining of having had pain in the liver region for one month, with right shoulder pain, slight weight loss, anorexia, and lassitude, but he had never felt any fever. He gave no history of amoebic dysentery, hepatitis, or diarrhoea. He was always well and healthy. He was not a heavy drinker.

Examination showed a slight filling of the 9th intercostal space in the right anterior axillary line, and a slight tenderness over this area,but no liver enlargement. The tongue was coated. The bowels were regular. The stools showed only charcot-leyden crystals but neither amoeba nor cyst. The urine showed no albumin and no bile. Blood Kahn reaction was negative. Blood count showed a slight polymorphonuclear leucocytosis but no obvious change in the erythrocytes.

Treatment consisted of subcutaneous emetine hydrochloride one grain daily for ten days, combined with aspiration of the liver pus. The first aspiration produced 57 c.c. of typical anchovy amoebic liver pus. The second aspiration, performed three days later, yielded only 3 c.c. of clear mucoid liver pus.

The patient made a rapid recovery and was discharged on 4/1/43. Follow-up progress showed no recurrences.

Case 5 : A man, aged 29, was admitted to hospital on 25/2/43, complaining of having suffered pain in the liver region for three weeks, with headache and right shoulder pain. He was taking some herbal infusions at home but he was not better. He gave a history of amoebic dysentery two years before when he had "injections in the arms". He had had no diarrhoea since the time he was treated for dysentery. He was a heavy drinker and had a large appetite.

Examination showed no obvious bulging or filling of the intercostal space, and no liver enlargement. There was a generalised tenderness over the liver with an area of maximum tenderness in the 9th intercostal space just lateral to the right mid-clavicular line. The stools showed no abnormality. The urine contained no albumin and no bile. Blood Kahn reaction was negative. Blood count showed a slight polymorphonuclear leucocytosis and no obvious erythrocytic changes. The pyrexia was remittent and it gradually subsided to normal while under treatment.

Hypodermic administration of emetine hydrochloride one grain daily for ten days, was instituted. An exploratory needle at the site of maximum tenderness produced the typical anchovy liver pus. An aspiration yielded 10 c.c. of liver pus. Pus smears showed the presence of entamoeba hystolytica. Oral yatren was given in dosage of one tablet t.d.s. p.c. for ten days.

The patient responded well to this treatment and only one aspiration was needed. He was discharged on 7/3/43. Follow-up progress showed no recurrences.

Case 6: A woman, aged 42, was admitted to hospital on 6/11/46, complaining of diarrhoea and flatulence, a painful mass in the epigastrium and left shoulder pain. She had noticed this mass since early August 1946. The mass at first was very small,but always painful, and it very gradually enlarged. She always felt a little fever in the afternoon and evening. She gave a history of left-sided hepatitis in January 1946 which was treated when she was in Mahé but she left Mahé before she had received a thorough overhaul. She went to work on an outlying island situated about 450 miles away. Since June 1946 she had occasional attacks of diarrhoea with abdominal colic,flatulence, and tenesmus. Though emetine hydrochloride was available on this outlying island, she had not reported sick and completely concealed her condition, preferring to take herbal infusions of her own preparation.

Since early August 1946 she had had fever and occasional rigors, anorexia, and left shoulder pain, but she continued with her own native remedy. Finally she reported sick when a ship called at the island at the end of October 1946 and she was transported back to Mahé to see a doctor.

On admission the patient was severely ill, very weak and markedly debilitated. She had severe anaemia. There was a swelling in the epigastrium, to the left of the midline. This swelling was painful and tender. The left liver lobe was enlarged downwards to three fingers below the rib margin. The right liver lobe enlarged across the epigastrium and the enlargement extended right laterally and downwards to one finger below the rib margin. The liver was tender bilaterally. Tenderness was present over the sigmoid. Sigmoidoscopy showed healed ulcers and also fresh ulcers in the rectum and sigmoid. Entamoeba histolytica and entamoeba histolytica cysts, pus cells, red blood cells, and mucus were found in the stools. The urine contained albumin and bile salts, but she had no icteric tingeing of the sclera. Blood count showed a marked polymorphonuclear leucocytosis and a severe secondary anaemia. Her blood kahn showed a strong positive reaction (K.R. +++).

Treatment consisted of hypodermic emetine hydrochloride, one grain daily for twelve days, combined with oral chiniofon, one tablet t.d.s. p.c. for twelve days. The first aspiration yielded about half a pint

of anchovy liver pus. Pus smears showed the presence of entamoeba histolytica. The second, third, fourth and fifth aspirations produced respectively 140 ccs., 62 ccs., 87 ccs., and 77 c.cs., the liver pus changing in colour after each successive aspiration from being anchovy-coloured to clear mucoid liver pus. The sixth and last aspiration produced no pus at all.

This patient made an uninterrupted recovery and was discharged from hospital on 18/11/46. Her stools were normal. Her ulcers had healed. Follow-up progress showed no recurrences.

Case 7: A man, aged 53, was admitted to hospital on 21/12/46, complaining of fever, pain in the liver region and pain in the right shoulder. He had no appetite and was losing weight from week to week. He had been ill for some months but was uncertain how many months. He was a heavy drinker and drank all kinds of alcoholic drinks, but he liked best his native beverage, the calou (or toddy, which is the sap of the coconut palm). He had had some drink while he was ill, though latterly he had given up drinking because he had lost the taste for alcohol and he thought alcohol made him worse. He gave a history of diarrhoea about four years before, which he had treated at home. He had no past history of hepatitis. He had some fever but it was never very high. He had night-sweats but did not remember any shivers.

Examination showed a bulging of all the [illegible]

intercostal spaces over the right liver area, as also oedema and inflammation of the skin overlying this area. There was a deformity and asymmetry betweem the two sides of the lower chestwall, the right side being larger than the corresponding left side. There was a generalised tenderness over the right liver lobe. The right lobe enlarged downwards to just below the umbilicus and also slightly upwards against the diaphragm, with chest signs over the right base. The left lobe enlarged to three fingers downwards and was slightly tender, but no upward enlargement was detected. There was tenderness over the caecum and the sigmoid. The bowels moved on an average two to four times in twenty-four hours. The tongue was furred. He was emaciated, and had marked anaemia and debility. He had no icterus, The urine contained no bile and no albumin. The stools showed entamoeba histolytica and cysts, and also ascaris ova and whipworm ova. Sigmoidoscopy showed both active and healed amoebic ulcers in the rectum and the sigmoid. Blood count showed a considerable polymorphonuclear leucocytosis and marked secondary anaemia. Blood Kahn reaction was negative. The sputum showed pneumococci and staphylococci, but no tubercle bacillus.

He was treated on hypodermic emetine hydrochloride, one grain daily for ten days, combined with oral chiniofon, one tablet b.d.s. p.c. for ten days, and aspirations of the liver abscess pus. Aspirations were performed right laterally in the mid-axillary line in the 9th intercostal space. The first aspiration

yielded 1000 c.cs of chocolate-coloured liver pus, and there was still some pus left in the abscess cavity. Pus smears showed the presence of entamoeba histolytica. The second and third aspirations produced respectively 360 c.cs. and 95 c.cs. of liver pus. The fourth aspiration yielded no pus. On this treatment the liver progressively diminished in size and was quite normal when the patient was discharged from hospital on 31/12/46. Recovery was rapid and uninterrupted. The stools were normal from the seventh day of treatment. Sigmoidoscopy on the last day showed healed ulcers. Follow-up progress showed no recurrences.

D. Emetine and Aspiration on an Encysted Liver Abscess:

Only one such case (0.91%) was seen in this series. Healing was rapid as the abscess was small.

Case 8 : A man, aged 52, was admitted to hospital on 3/12/46, complaining of fever, pain in the liver, and pain in the right shoulder. He gave a history of hepatitis fifteen years before, which had been treated. He had had diarrhoea on and off during 1946 but had paid no attention to it. He had had pain in the liver region for about seven months, with fever from time to time and shivers and night-sweats. He was not a big eater but he had no appetite during the seven months he was ill. He was a drinker, chiefly of "calou". He had lost much weight and felt very weak.

On examination he had a swelling with oedema and tenderness over the right liver lobe which was enlarged downwards to four fingers below the rib margin. He was thin and pale. He had anaemia and debility. His tongue was coated. There was tenderness over the caecum and the sigmoid. The stools showed whipworm ova only. The urine contained albumin and bile salts. Blood count showed a polymorphonuclear leucocytosis and secondary anaemia. Blood Kahn reaction was negative.

The treatment consisted of subcutaneous emetine hydrochloride, one grain daily for ten days, combined with oral chiniofon, one tablet b.d.s. for twelve days, and aspirations of the liver pus. The abscess site was located right anteriorly just below the rib margin in the midclavicular line. The first aspiration yielded 300 c.cs. of anchovy liver pus. Pus smears showed the presence of entamoeba histolytica. The second, third and fourth aspirations performed every second day yielded respectively 110 c.cs, and 225 c.cs and 45 c.cs of liver pus. Two more aspirations performed ten days and then two weeks respectively from the beginning of treatment yielded no result. The liver returned to normal. Pain and tenderness had disappeared. Tenderness over the caecum and sigmoid no longer existed. The stools showed no protozoa or cyst.

He made good convalescence and was discharged from hospital on 22/12/46, with instructions to attend

the hospital on the follow-up system.

Six days later, on 28/12/46, this man came to hospital and reported an area of pain in the 9th right intercostal space in the mid-axillary line and pain in the right shoulder. Tenderness was elicited in a small circumscribed area of the liver in this region. An aspiration produced only 10 c.cs of creamy yellow mucoid liver pus, the aspiration needle traversing the liver substance with a grating and resisting sensation till the abscess cavity was reached. Two more aspirations on later dates produced no result. Subcutaneous emetine hydrochloride was administered in one grain dosage daily for ten days combined with oral chiniofon, one tablet b.d.s. for ten days. The stools showed no entamoeba histolytica or cyst. The patient made an uneventful recovery and was discharged from hospital on 6/1/47. Follow-up progress showed no recurrenceswhatsoever.

E. <u>The treatment of Giardia Lamblia in Amoebic Liver Abscess case</u>.

In this case of liver abscess where entamoeba histolytica was identified in the abscess smears and entamoeba histolytica and giardia lamblia were found in the stools, a congestive heart failure existed together with a mild degree of ascites and oedema of the ankles and legs. The patient was given digitalis for four days and then specific amoebic treatment was instituted only when the myocardium and oedema

had returned to normal and ascites had diminished. The patient was watched with great care, and fortunately no myocardial complication ensued. The giardia treatment was started when the amoebic treatment was completed.

Giardia Lamblia has been identified in association with amoebiasis in an increasing number of cases in Seychelles. Giardiasis has also been found to occur alone unconnected with amoebiasis.

Giardia Lamblia was detected in only two liver abscess cases (1.81%) in the Seychelles series. One case is recorded hereunder.

Case 9: A man, aged 51, was admitted to hospital on 15/10/46, with fever, pain in the liver region, and right shoulder pain. He complained also of a "fullness" in the abdomen, breathlessness on exertion,and swelling of the ankles and legs. He had no appetite. He felt weak and easily fatigued. He had shivers and night-sweats. He preferred to sleep on his right side. He had no diarrhoea but rather a tendency to constipation. He had lost much weight. He was pale and debilitated. He gave a past history of hepatitis eight years before which had been treated, and a second attack of hepatitis one month before for which he had been treated in hospital. He had felt the pain in the liver region for about three months. He was a drinker chiefly of the local brews, calou and bacca, but had stopped drinking about three months previously. He had a dry unproductive cough.

Examination showed a congestive heart failure, with fluid in the abdomen, swelling of the ankles and legs, an enlarged heart, and a very tender liver. The right liver lobe enlarged downwards to the level of the umbilicus and upwards very slightly with lung signs over the right base. The left liver lobe enlarged downwards to one finger below the rib margin but there was no upward enlargement. The tongue was furred. There was tenderness, swelling, and oedema of the skin over the liver, chiefly right anterolaterally and extended outwards uniformly to right laterally. The spleen was not palpable. There was tenderness over the caecum but not the sigmoid. The stools showed the presence of entamoeba histolytica, giardia lamblia and whipworm ova (trichuris Trichiura). The urine contained a trace of albumin but no bile. Blood count showed a polymorphonuclear leucocytosis of 28,000 cells per cubic millimeter and considerable secondary anaemia. Blood Kahn reaction was negative.

Hypodermic emetine hydrochloride, one grain daily for ten days, combined with oral chiniofon, one tablet b.d.s. for ten days, was instituted on the fifth day after admission. For the first four days digitalis was given. The first aspiration, performed on the sixth day of emetine and chiniofon therapy, yielded over four pints of anchovy liver pus, in which the entamoeba histolytica was identified. The second aspiration, performed five days later, produced about 3½ pints of liver pus, in which now no entamoeba

entamoeba was found. At this stage, the pyrexia, which was intermittent, subsided to normal. The stools were now free from the entamoeba histolytica but giardia lamblia was still present. Oral quinacrine, one tablet t.d.s. p.c. for five days, was started and the stools were examined on the fourth, fifth and sixth days, when they were found to be free from giardia. A third aspiration was performed at three sites over the liver five days after the second aspiration but no liver pus was found. The tenderness over the caecum had disappeared.

The patient made an uneventful recovery and was discharged from the hospital on 4/11/46. Follow-up progress showed no recurrences.

F. The treatment of Balatidium Coli in two Liver Abscess cases.

Two amoebic liver abscess cases, comprising 1.81% in the series, are recorded in which the stools contained entamoeba histolytica and balatidium coli.

The Balatidium Coli is endemic in Seychelles, but it is rarely encountered.

Case 10: A man, aged 46, was admitted to hospital on 7/2/43, complaining of having had diarrhoea and pain in the abdomen for three months, and in the right hypochondrium for one-and-half month. He had had pain in the liver and a right shoulder pain for nearly three months. He was coughing up brownish sputum for three weeks. He was weak and debilitated. He was

pale and anaemic. He had no appetite and had lost some weight. He was a good eater and a heavy drinker but had stopped drinking since he had become ill because drinks made him worse.

Examination showed pallor and anaemia, weakness and emaciation, a furred tongue, tenderness over the right liver lobe with a downward enlargement to two fingers below the rib margin, tenderness in the right hypochondrium, and there were lung signs over the right base. The left liver lobe, spleen and kidneys were normal. No tenderness was found over the caecum or the sigmoid. Haemic systolic pulmonary murmur was present. The urine contained no albumin and no bile. The stool showed the presence of entamoeba histolytica and cysts, balatidium coli, blood cells and mucus, and also ankylostoma ova and trichuris ova. The sputum was chocolate-coloured, mucoid, stained with fresh blood, and had the typical odour and appearance of amoebic liver abscess pus. No tubercle bacillus and no entamoeba histolytica was found in the expectorated pus. Blood count showed a polymorphonuclear leucocytosis and secondary anaemia. Blood Kahn reaction was negative.

Treatment consisted of hypodermic emetine hydrochloride, one grain daily for ten days, combined with oral stovarsol , one tablet t.d.s. p.c. for ten days. The general condition rapidly improved, so that by the fifth day no more coughing and expectoration were observed, and no more pain and tenderness was found

in the liver margin, in the right hypochondrium and in the abdomen. The general appearance progressively improved. The stools became well-formed and on the sixth, seventh, eight, ninth and tenth day were free from the entamoeba and cyst and the balatidium coli. Chenopodium oil treatment for worms was givem on the eleventh day and the patient was discharged from hospital on the twelfth day,(18/2/43), to continue as an out-patient. Follow-up progress showed no recurrences.

Case 11: A man, aged 31, was admitted to hospital on 25/3/43, complaining of fever, pain in the right epigastrium and the liver region for three weeks, diarrhoea and pain in the abdomen for over five weeks. He felt weak. He had no appetite and had lost some considerable weight. He was an occasional drinker, without over-indulgence, and was normally a good eater. He had a right shoulder pain.

Examination showed a tender right liver lobe which had a downward enlargement to one finger below the rib margin and also about two fingers across the epigastrium. The left lobe was neither enlarged, painful nor tender. The spleen and kidneys were not palpable. There was no obvious tenderness over the caecum or sigmoid. The tongue was coated. The urine contained no albumin or bile. The stool showed the presence of the entamoeba histolytica and fair numbers of balatidium coli and also blood cells,

mucus and a few trichuris ova. Blood count showed a polymorphonuclear leucocytosis and secondary anaemia. Blood Kahn reaction was negative.

Treatment consisted of subcutaneous emetine hydrochloride one grain daily for ten days, combined with intramuscular adult acetylarsan in 3 c.cs. doses every third day for four injections. The first aspiration yielded 4 c.cs of typical anchovy liver abscess pus, in which the entamoeba histolytica was identified. The second and third aspirations produced no pus. The stools were free from entamoeba histolytica and balatidium coli on the eighth, ninth, tenth, eleventh and twelfth day. Chenopodium oil treatment was given before the patient left the hospital.

He made an uninterrupted recovery and was discharged from hospital on 8/4/43. Follow-up progress showed no recurrences.

G. <u>The treatment of cases of Expectorated Liver Abscess Pus</u>.

Only three cases of this group, comprising 20% of cases, are here recorded. One case was admitted with haemoptysis which at first was thought to be due to pulmonary tuberculosis because the expectorated material was bright red blood intermingled with phlegm and there was no evidence of any chocolate pus. Though the patient had the physical signs of pulmonary tuberculosis in the right lower lobe of the lung, repeated microscopic examinations of the expectorated material showed no tubercle bacillus. On the second day

therefore specific amoebic treatment was started and the patient made a rapid improvement and recovered.

In the other two cases specific amoebic treatment was given from the first day of admission. In the first of these, improvement was very rapid. In the other, improvement took longer. Both made an uneventful recovery.

Penicillin was administered in the latter two cases but it gave no benefit at all to the liver abscess. No aspiration was performed on these cases.

Case 12: A man, aged 33, was admitted to hospital on 17/2/44, complaining of coughing up blood for one day. The cough had not lessened, and each time he had had a bout of coughing he coughed up some blood. He was a hard-working man and had a good job. He very rarely drank because he disliked alcohol. He had begun to feel ill about three weeks before admission, went off food, got weaker, had pain in the region of the right diaphragm and a right shoulder pain at the same time. He had headache, felt feverish sometimes, and sweated more than usual especially during sleep. He continued to work till he began to cough up blood. He had lost some weight. He gave no past history of amoebic dysentery or hepatitis. He had no diarrhoea or constipation. The bowels were always regular.

Examination showed a slight tenderness over the right liver lobe, but no downward enlargement of the liver, and also a slight tenderness in the right

diaphragmatic area with lung signs in the right lower lobe, especially over the right base. He was thin, pale and emaciated. His tongue was coated. There was no pain or tenderness in the left liver lobe,and no tenderness over the caecum or sigmoid. The spleen and kidneys were not palpable. Repeated microscopic examinations of the expectorated material on the first and second day showed no tubercle bacillus. The stools showed charcot-leyden crystals but no amoeba or cyst. The urine contained a trace of albumin but no bile. Blood count showed polymorphonuclear leucocytotis and secondary anaemia. Blood Kahn reaction was negative.

Specific amoebic treatment was started on the second day after admission, and the pyrexia which was intermittent gradually subsided to normal and even became subnormal. The treatment consisted of subcutaneous emetine hydrochloride, one grain daily for twelve days, combined with oral yatren one tablet t.d.s. p.c. for twelve days. No aspiration was performed. The cough and expectoration and also the lung signs diminished from day to day and completely disappeared after the seventh day.

The patient made an uninterrupted recpvery and was discharged on 4/3/44. Follow-up progress showed no recurrences.

Case 13: A man, aged 29, was admitted to hospital on 7/9/46 with the history of coughing up some red pus since the early hours of the same morning. He had been

ill for about one month with pain in the liver region and in the right shoulder. He had had mild fever on and off, and he had continued to work until one week before when the pain became worse and he had more fever. He had night-sweats and occasional shivers. He felt weak and had had headache for over one week. He was a good eater but lost appetite during illness. He took alcohol on and off, but refrained from it completely since he had felt ill because alcohol made him worse. He gave no past history of amoebic dysentery or hepatitis. He had no diarrhoea and no constipation, the bowels being generally regular.

Examination showed a slight bulging of the ribs and intercostal spaces over the liver right anterolaterally. The right liver lobe was tender, with a slight upward enlargement and a downward enlargement to one-and-half finger below the rib margin. Prepneumonic signs were present over the right base and over the right lower lobe generally. He had no icterus. His tongue was coated. He had no tenderness over the caecum or sigmoid. The left liver lobe was neither tender nor enlarged. The spleen and kidneys were not palpable. The urine contained a faint trace of albumin. The stools showed only trichuris ova. Smears of the expectorated material showed no tubercle bacillus and no entamoeba was detected. Blood count showed a polymorphonuclear leucocytosis and secondary anaemia. Blood Kahn reaction was strong positive (K.R. +++).

Treatment consisted of subcutaneous emetine hydrochloride one grain daily for ten days, combined with oral chiniofon, one tablet b.d.s. for ten days. Penicillin was started on the first day because of the pre-pneumonic lung signs in dosage of 20,000 Units every three hours up to 200,000 Units. The temperature which registered at 103°F. fell by crisis within 24 hours to 98°2 F. and remained subnormal for six days, and no more pneumonic signs were detected. On the ninth day the morning temperature registered 99°2F. and in view of the recent pre-pneumonic signs penicillin was repeated in the same dosage and quantity. On that afternoon the temperature fell to normal and remained so till the patient was discharged from hospital. The cough and expectoration diminished very rapidly and ceased completely after four days of emetine and chiniofon therapy.

The patient made an uninterrupted recovery and was discharged from hospital on 17/9/46, to have syphilitic treatment at the venereal disease clinic as an out-patient. Follow-up progress showed no recurrences.

Case 14 : A man, aged 22, was admitted to hospital on 21/12/46, complaining of pain in the liver region and right shoulder pain and a "heavy feeling" in the liver region. The pain and "heaviness" became gradually worse. He had headache, fever and night-sweats. He had no appetite for food. He felt weak and had lost some weight. He was a habitual drinker, chiefly

of calou. He was usually constipated. He gave a past history of amoebic dysentery about two years previously which had been treated.

Examination showed a furred tongue, a bulging and filling of the intercostal spaces in the hepatic region right laterally. The liver was tender, with a downward enlargement to three fingers below the rib margin and a slight enlargement upwards. Pneumonic signs were present over the right base. There was tenderness over the caecum but not the sigmoid. There was no icterus, and no tenderness or enlargement of the left liver lobe. The spleen and kidneys were not palpable. The urine contained albumin but no bile. The stools showed charcot-leyden crystals and trichuris ova. Blood count showed polymorphonuclear leucocytosis and secondary anaemia. Blood Kahn reaction was negative.

Treatment consisted of hypodermic emetine hydrochloride, one grain daily for ten days, combined with oral chiniofon, one tablet b.d.s. for ten days. On 22/12/45 the patient began to cough up copious anchovy liver abscess pus, but it was very much diminished the next day. On 23/12/46 as basal pneumonic signs were still present, penicillin was administered in dosage of 20,000 Units every three hours up to 200,000 Units. The temperature which was remittent in type gradually subsided and reached normal on 26/12/46. The cough and expectoration ceased completely after eight days of the combined therapy.

The patient made a successful recovery and was discharged from hospital on 31/12/46. Follow-up progress showed no recurrences.

H. Incision and Drainage combined with Emetine and Chiniofon.

This group comprises 6.37% of cases in the series. The following case illustrates a recurrence of liver abscess in a patient on whom an incision and drainage was made and combined emetine and chiniofon therapy given.

Case 15: A man, aged 45, was admitted to hospital on 1/10/46, complaining of a painful swelling in the right epigastrium of one week's duration. He had no shoulder pain and no headache. He felt some fever and had occasional shivers.during the week before admission. He was a good eater and took alcohol off and on, chiefly the local calou and bacca. He gave no past history of diarrhoea, or amoebic dysentery, or hepatitis. The bowels were always regular. The stools showed no amoeba. The urine contained a faint trace of albumin and bile salts. There was no icterus. Blood count showed polymorphonuclear leucocytosis and secondary anaemia. Blood Kahn reaction was strong positive (K.R. +++). The liver was enlarged to over two fingers across the epigastrium. There was no tenderness over the caecum or sigmoid.

Treatment comprised hypodermic emetine hydrochloride, one grain daily for ten days, combined with oral

chiniofon, one tablet b.d.s. for ten days. The tender swelling in the right epigastrium remained the same after three days of this combined therapy though the pyrexia which was mildly remittent had subsided to normal. On the fourth day an exploratory needle over the tender swelling produced the typical anchovy liver pus in which the entamoeba histolytica was identified. An incision was made through the locally anasthetised skin in the right epigastrium and a considerable quantity of anchovy liver pus evacuated. A drainage tube was left in situ and pus drained for ten days, after which the tube was removed and hot boracic fomentation applied till no more pus exuded and the incision wound healed. Penicillin in dosage of 20,000 Units every three hours up to a total of 200,000 Units was given from the day the drainage tube was removed in order to combat any possible secondary infection, which however did not occur.

The patient made a good recovery and was discharged from hospital on 18/10/46. He was instructed to return on 1/11/46 for checking up on his progress.

He reported on 4/11/46 and the value of the follow-up system became clear for by this date he was found to have re-formed some pus in the same abscess cavity. Aspiration yielded 90 c.cs of liver pus which was not so thick and so anchovy-coloured as before. No entamoeba histolytica and no micro-organism were detected in the pus smears.

He was re-admitted to hospital and the combined emetine-chiniofon therapy again instituted for ten days. The stools again showed no evidence of entamoeba histolytica or cyst. A second aspiration four days after the first produced no pus.

He made a good recovery and was discharged from hospital on 14/11/46. When he reported back one month later he showed no more evidence of liver abscess and the stools were clear. He was given a third course of the combined emetine-chiniofon therapy. Follow-up progress thereafter showed no more recurrences.

The treatment for tertiary syphilis was given to the patient at the venereal disease clinic after he had completed his convalescence.

I. Laparotomy and Drainage combined with Emetine and Chiniofon.

Three cases are illustrated here of ruptured amoebic liver abscess with peritonitis which necessitated a laparotomy and drainage. They are three varieties of the same category. The third case in this collection actually required several aspirations. This group comprises 4.54% of cases in the series.

Case 16: A woman, aged 78, was admitted to hospital on 2/7/46, complaining of a little pain in the region of the caecum and the ascending colon, of twenty days' duration. She had always enjoyed good

health. She had no past history of diarrhoea, dysentery, or hepatitis. She had no shoulder pain and no other pain. She had not felt any fever, and did not have headache, shivers or night-sweats. She had normally a small appetite, but she had lost appetite during her illness. Her bowels were fairly regular but would occasionally miss a day. She had much flatulence. She felt somewhat weak but thought this was because she had not been eating so well lately. She was thin and pale. She was not a drinker.

Examination showedpallor, a furred tongue, temperature 99°F., pulse 86, respiration 24, a firm mass palpable in the right hypochondrium and extending down to below the umbilicus and ending just above the right iliac crest, with tenderness elicited over the proximal part of the ascending colon. The urine showed a faint trace of albumin but no bile. Blood count showed a slight polymorphonuclear leucocytosis and secondary anaemia. The stools showed charcot-leyden crystals, but no entamoeba or cyst. There was a very slight tenderness over the caecum, but none over the sigmoid. No abnormal lung signs were detected. The spleen and kidneys were not palpable. The left liver lobe was neither enlarged nor tender.

At an emergency laparotomy, performed under local Novutox anaesthesia, the palpable mass proved to be the liver enlarged downwards to the umbilicus and across outwards and laterally to just above the right iliac crest. A small liver abscess was found in the

anterior surface of the liver sited over the proximal end of the ascending colon. A small opening was made in the abscess wall and typical anchovy liver pus exuded. Pus smears taken from the abscess wall showed the presence of entamoeba histolytica. Few staphylococci were present in the abscess pus. Two drainage tubes were left in situa, one fine tube draining from the abscess cavity, and a medium-sized tube from the pelvis. Hypodermic emetine, half grain daily for twelve days, combined with oral chiniofon, one tablet b.d.s. for twelve days, was instituted. Penicillin was given in doses of 30,000 Units every three hours up to a total of 300,000 Units. The staphylococci were no longer found on the third, fourth, fifth and sixth days, pus being taken very carefully and aseptically through the fine tube draining from the abscess cavity. Similarly the entamoeba histolytica was no longer found in the pus smears. The medium-sized drainage tube was removed on the third day as no pus at all came through this tube. The fine drainage tube was removed on the sixth day when it was seen that no more liver pus exuded. The wound was allowed to heal and to close up completely. On the fourteenth day penicillin was repeated in doses of 20,000 Units every three hours up to a total of 200,000 Units. On the seventeenth day sulphanilamide was given in doses of two tablets t.d.s. p.c. for three days. This extra precaution was taken in order to obviate any possibility of a secondary infection re-starting in the

liver. Blood Kahn reaction was negative. The stools showed no entamoeba histolytica or cyst in spite of repeated examinations.

On 30/7/46 emetine hydrochloride in one grain daily doses combined with chiniofon in doses of one tablet b.d.s. was given for six days.

The patient made an uninterrupted recovery and was discharged from hospital on 5/8/46. Follow-up progress showed no recurrences.

Case 17: A man, aged 30, was admitted to hospital on 19/8/46, complaining of fever, pain in the liver region and right shoulder, weakness, flatulence, anorexia, and pain over the caecum, of over three months' duration. He gave a past history of two attacks of amoebic dysentery which had been treated, and one attack of hepatitis about four months ago which also had been treated. He was normally a good eater but went off food since he fell ill. He rarely had a drink, and had ceased drinking four months before admission.

Examination showed him to be a weak and emaciated man, with anaemia, pyrexia, a furred tongue, and a tender liver which was enlarged downwards to four fingers below the rib margin and also slightly upwards against the diaphragm with lung signs over the right lobe. There was tenderness over the caecum. The left lobe was not tender but enlarged downwards to one finger below the rib margin. The spleen and kidneys were not palpable. A marked haemic systolic

murmur was present in the pulmonary area. The stools showed charcot-leyden crystals, ankylostoma ova and trichuris ova. The urine contained albumin but no bile. Blood count showed polymorphonuclear leucocytosis and secondary anaemia. Blood Kahn reaction was negative.

Hypodermic emetine hydrochloride in one grain daily doses for ten days and oral chiniofon, one tablet b.d.s. for ten days, were prescribed. The pyrexia increased daily till 21/8/46. The patient had rigors and night-sweats. On 22/6/46 he developed a peritonitis and an emergency laparotomy was performed,when the typical anchovy liver pus was found. The liver was enlarged to four fingers below the rib margin. The abscess cavity was found in the postero-lateral sector of the liver. The abdomen was closed with a drainage tube left in situ, and the liver pus was allowed to drain from the abdominal cavity. Pus smears taken directly from the abscess wall showed the entamoeba histolytica but no secondary organisms. The emetine-chiniofon therapy was continued. Penicillin was given in doses of 30,000 Units every three hours up to a total of 300,000 Units. The drainage tube was removed on 27/8/46 as no more exudate appeared through it. On 28/8/46 penicillin was repeated in doses of 20,000 Units every three hours up to a total of 200,000 Units and this was followed by the oral administration of sulphanilamide, two tablets t.d.s. p.c. for three days. These drugs were given prophylactically against any possible secondary infection by

pyogenic organisms, and no secondary infection occurred.

The patient made an uninterrupted recovery and was discharged from hospital on 7/9/46. No recurrence was seen on the follow-up.

The specific helminthic treatment was given after convalescence when the patient had regained substantial health and strength.

Case 18. A man, aged 32, was admitted to hospital on 11/11/46, complaining of pain in the liver region, shoulders and pain in the abdomen. He had a "heavy feeling" in the liver for many days and pain in the liver region and the right shoulder for five days, and left shoulder pain for one day. He had shivers and night-sweats. He lost weight, had no appetite, and became thin and weak. He gave a history of diarrhoea on and off for over one month. He was normally a small eater, but a heavy drinker chiefly of calou and bacca and more rarely, spirits. He gave no past history of amoebic dysentery or hepatitis.

Examination showed an early peritonitis, the right liver lobe was tender and enlarged downwards to four fingers below the rib margin and also upwards with lung signs over the right base. He had a bulging and filling of the intercostal space and also oedema of the skin over the right liver lobe. He had a marked haemic systolic murmur in the pulmonary area, with severe anaemia. The respiration seemed embarrassed because of pain and discomfort in the right upper

abdomen. The left liver lobe was enlarged downwards to one finger below the rib margin. The spleen and kidneys were not palpable. He had no icterus. The urine contained albumin but no bile. The stools showed entamoeba histolytica. Blood count showed marked polymorphonuclear leucocytosis and severe secondary anaemia. Blood Kahn reaction was negative.

An emergency laparotomy was performed on 11/11/46 under local Novutox anaesthesia, as the patient's general condition was too poor to tolerate a general anaesthesia. Fluid-like anchovy liver pus was encountered. The liver contained a large abscess cavity. The abdomen was closed in layers with a drainage tube left in situ to drain the liver pus from the abdominal cavity. No entamoeba histolytica and no organism were detected in the pus smears examined microscopically.

Hypodermic emetine hydrochloride, half grain daily for ten days, and oral chiniofon, one tablet b.d.s. for ten days, wete instituted. Penicillin was given in doses of 30,000 Units every three hours up to a total of 400,000 Units. On 14/11/46, as only clear fluid exuded from the abdomen, the drainage tube was removed.

On 19/11/46 pain and tenderness over the liver increased as also did the right shoulder pain. He had one rigor and sweated profusely. The lung signs over the right base became more pronounced. The temperature, which had returned to normal, now

registered over 99°F. and the pulse likewise increased slightly. An aspiration was performed under local Novutox anaesthesia in the 9th intercosyal space in the right mid-axillary line,and it yielded 2.500 c.cs of anchovy liver pus. Pus smears showed the presence of entamoeba histolytica. Subsequent aspirations yielded liver pus as follows :-

21/11/46	2nd aspiration	588 c.cs	thickish liver-pus.
23/11/46	3rd "	720 c.cs	fluid-like liver-pus.
26/11/46	4th "	543 c.cs	fluid liver-pus.
28/11/46	5th "	320 c.cs	fluid,pale,anchovy pus.
30/11/46	6th "	90 c.cs	fluid,pale,anchovy pus.

On 24/11/46 emetine hydrochloride was repeated in one grain doses for five days combined with chiniofon one tablet b.d.s. for five days. The patient made a very slow improvement and the specific treatment so far was evidently insufficient. Because the patient's general condition was very poor it was impossible to overtax him with an excessive emetine-chiniofon-aspiration therapy.

On 8/12/46 emetine hydrochloride and chiniofon were resumed for five days. But on 16/12/46 his physical signs and symptoms, which had receded to normal for two weeks, again became pronounced. Emetine hydrochloride in one grain daily doses and chiniofon one tablet b.d.s. were repeated for ten days. Aspirations were continued as follows :-

16/12/46	7th aspiration	840 c.cs	fluid,pale,anchovy pus.
19/12/46	8th "	165 c.c.s	" " " "
24/12/46	9th "	320 c,cs	fluid,pale,liver pus.
30/12/46	10th "	No pus.	

It should be mentioned that at the tenth aspira-

aspiration three sites were explored but yielded no pus.

Penicillin was repeated on 16/12/46 in doses of 20,000 Units every three hours up to a total of 200,000 Units. This was given in view to the presence of an unproductive cough and lung signs at the right base.

The patient's general condition had improved very considerably when he was discharged from hospital on 31/12/46. Follow-up progress showed no recurrences, and the system of follow-up treatment was well-maintained.

CONCLUSIONS ON TREATMENT.

Emetine hydrochloride is the most effective drug in the treatment of tropical amoebic liver abscess. This drug has proved its value in the treatment of all liver abscess cases in the Seychelles series.

Emetine hydrochloride may be used alone in such cases uncombined with any other amoebicidal drug, provided the stools on repeated microscopic examinations show no entamoeba histolytica or cyst, since emetine acts primarily on the entamoeba living in the tissues. When the protozoa or cyst is identified in the stools an oral drug such as yatren (or chiniofon), stovarsol, enterovioform or diodoquin is indicated for its action on the amoeba or cyst in the intestine, or such an amoebicide as quinoxyl or yatren is administered as a retention enema.

It is nevertheless more satisfactory to combine hypodermic-emetine hydrochloride with an oral amoebicidal drug such as yatren, (or chiniofon), or stovarsol, and also quinoxy or yatren given as a retention enema in resistent intestinal amoebic cases. To qualify this statement it should be borne in mind that intestinal amoebiasis may exist in a patient where no entamoeba or cyst is identified despite repeated stool examinations.

It is seen in the Seychelles series that the combined emetine-chiniofon-aspiration therapy is the best method of treating amoebic liver abscess cases. Chiniofon is quoted in this triad but it may be quite suitably replaced by any one of the oral amoebicidal drugs, as they have been used quite successfully in this series.

Some liver abscesses were very small and some, though small, were yet in the very early stage. These cases were given emetine without aspiration and did well.

Some authors advocate the injection of emetine into the abscess cavity following aspiration of the liver pus. This method was tried in twelve cases but it was found to give no acceleration in the healing process. Hence it was abandoned. The reason for this rejection has been recorded in the chapter on "Treatment" in this thesis.

The spontaneous rupture of a liver abscess resulting in the expectoration of the liver pus may void the abscess cavity which with hypodermic emetine

administration may progressively diminish in size or may collapse and heal more rapidly. A case may be encountered however in which the expectoration does not empty the liver abscess cavity completely and some pus remains in the abscess cavity and more pus may form. Such a case requires aspiration in order to withdraw the liver pus collected in the abscess cavity, emetine being administered hypodermically as the best specific therapeutic drug.

A liver abscess ruptured into the abdominal cavity requires treatment on the general surgical lines, namely laparotomy and drainage, and this must be supported by specific emetine treatment.

TABLE 29. TREATMENT METHODS COMPARED.

Treatment	No. of cases	Percentages.
Emetine without aspiration	12	10.91%
Emetine with aspiration	62	56.36%
Emetine with open operation	7	6.37%
Emetine with expectoration through lung	22	20.00%
Emetine with rupture through skin	2	1.82%
Emetine with laparotomy for ruptured liver abscess	5	4.54%
Total	110	100%

Complete rest in bed is of primary importance while the patient is under emetine therapy since emetine has a toxic depressing effect on the myocardium. The patient must be watched carefully for any toxic symptoms which may become evident at any time and without warning. When a toxic symptom appears emetine

must be discontinued till the condition returns to normal. Emetine may then be resumed in reduced doses and the patient watched with great care.

In this series, emetine hydrochloride is administered hypodermically up to a total of ten grains in the great majority of cases, and in some few cases up to twelve grains. It is found most advantageous for obtaining better and quicker results to combine hypodermic emetine administration with an oral iodide or arsenical amoebicidal drug.

The "follow-up" system is practiced on every case. In this system the patient is given a thorough re-examination one month after the beginning of the treatment, and again one month later, so that nothing goes amiss and complete recovery is assured. At each re-examination the stools and urine are examined on three successive days and emetine given hypodermically in one grain daily doses up to eight to ten grains. When an abscess is encountered it is submitted to aspiration as in the usual routine treatment.

The diet during treatment is light and easily digestible. Milk diet is given during the first four to five days, then increased to boiled light diet for one week, and thereafter gradually increased in calories to full diet in convalescence.

SUMMARY AND GENERAL CONCLUSIONS DRAWN FROM THE THESIS.

In this Seychelles series tropical amoebic liver abscess has been discussed from clinical observations made on 110 cases treated at the Seychelles Government Hospital, which is also the main centre for the Seychelles Colony, in a nine-year period extending from January 1938 to December 1946 inclusive.

Tropical amoebic liver abscess has been recorded by observers in India, U.S.A., Britain, the Far Eastern countries, North and Central Africa, South America and the West Indies, most eminently by Manson and by Rogers and McGaw.

There exists an intimate relationship between amoebiasis and amoebic liver abscess. The causative organism, the entaemoba histolytica, was first described by Lambl in 1859 and subsequently by Losch in 1875. Kartulis in 1886 found it in the stools in endemic dysentery in Egypt and in liver abscesses. Osler in 1890 found it in a case of dysentery with liver abscess originating in Panama.

Amoebic dysentery is endemic in Seychelles. The majority of cases of amoebic dysentery occurs among the natives, who endeavour to check the symptoms by consuming their own local herbal infusions which are not amoebicidal. Hence the majority of amoebic liver abscess cases is found among the natives. It is most rare among Europeans and white races, who live on better sanitary and prophylactic principles.

There seems no seasonal prevalence which may be accounted for by any meteorological factors, such as temperature, humidity or rainfall. Cases appear at any time of the year.

The male sex is most outstandingly preponderant in liver abscess cases in this series, the females showing an extremely low incidence rate.

Alcohol is much consumed by the natives, particularly the male sex. Alcohol appears to show a very marked predisposing factor to liver abscess incidence.

Alcohol abstainers are not entirely exempt from developing a liver abscess, and a few cases are encountered.

The condition is rare below the age of twenty years, there being three cases in this series, the youngest a native girl aged 2 years. The greatest incidence rate occurs in the age group ranging between 21 and 40 years. The oldest case is a woman aged 78 years.

The causative organism of tropical liver abscess in the Seychelles series is the entamoeba histolytica. This protozoa is found in at least 64.55% of cases, being identified microscopically in smears of pus taken from the abscess wall and in the thick debris withdrawn from the abscess cavity.

The course of the illness varies according to the duration and intensity of the disease. It is short when treatment is begun in the early stage, but long and protracted when the abscess cavity is very large

general lassitude and lethargy. Rigors are seen in 5.45% of cases, and night-sweats in 57.27%.

Examination may show a swelling, a bulging of the ribs and intercostal spaces, and an asymmetry of the chestwall. It must be mentioned however that some cases are met which do not show swelling, bulging, or asymmetry of the chestwall.

Cases of obscure pyrexia associated with a liver abscess are encountered. Such cases may be misleading diagnostically and the actual condition may be misdiagnosed leaving the patient to become progressively worse.

Polymorphonuclear leucocytosis is a common feature in liver abscess occurring in 91.81% of cases,and secondary anaemia is found in 78.18%.

Albumin and bile salts may occur in the urine. The icteric tingeing of the sclera is seen in a very small percentage of cases.

The coated tongue is a common sign.

The entamoebe histolytica is identified in the stools in 10.91% of cases, and the entamoeba histolytica cysts in 18.18%.

Syphilis is not considered to be the causative factor. It may predispose the liver to infection by the entamoeba histolytica through the lowered vitality of the liver tissues.

The treatment of tropical amoebic liver abscess must be adequate, persistent and thorough. Otherwise the abscess will recur.

Emetine hydrochloride administered hypodermically appears to be the most specific drug in the treatment of amoebic liver abscess. The result is better when the hypodermic emetine is used together with an oral amoebicide. Quinoxyl or yatren is given as a retention enema in resistant intestinal amoebiasis when this is present in amoebic liver abscess cases.

The combined therapy consisting of hypodermic emetine hydrochloride, an oral amoebicide, and aspiration of the liver pus is the best method of treatment of amoebic liver abscess. Surgery should be reserved for only those cases in which a surgical interference is indicated, such as peritonitis due to a ruptured liver abscess, and this should be followed by the hypodermic administration of emetine together with an oral amoebicide.

A mortality rate of 6.36% is recorded in this series. Neglect of the specific amoebic treatment at the offset and the existence of a very extensive amoebic liver abscess make prognosis less favourable. The prognosis is good when treatment is begun early.

The high percentage of cure is remarkable since most cases admitted to hospital are in the advanced stage of liver abscess.

Penicillin has no value whatsoever as an amoebicide. It has no action at all on the entamoeba histolytica.

The sulphonamide drugs have no amoebicidal effect.

Clinically the tropical amoebic liver abscess is a distressing and debilitating condition, severely undermining to the health, is tedious to treat, requires much patience and perseverance in administering treatment, and needs long convalescence. One infection gives no immunity and the condition may recur. Treatment must be specific, adequate, and thorough.

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==========

DISEASE

AMOEBIC LIVER ABSCESS.

Jeanne Labonne.

NAME { Female

AGE 2 years.

DIET

CASE BOOK No

NOTES OF CASE

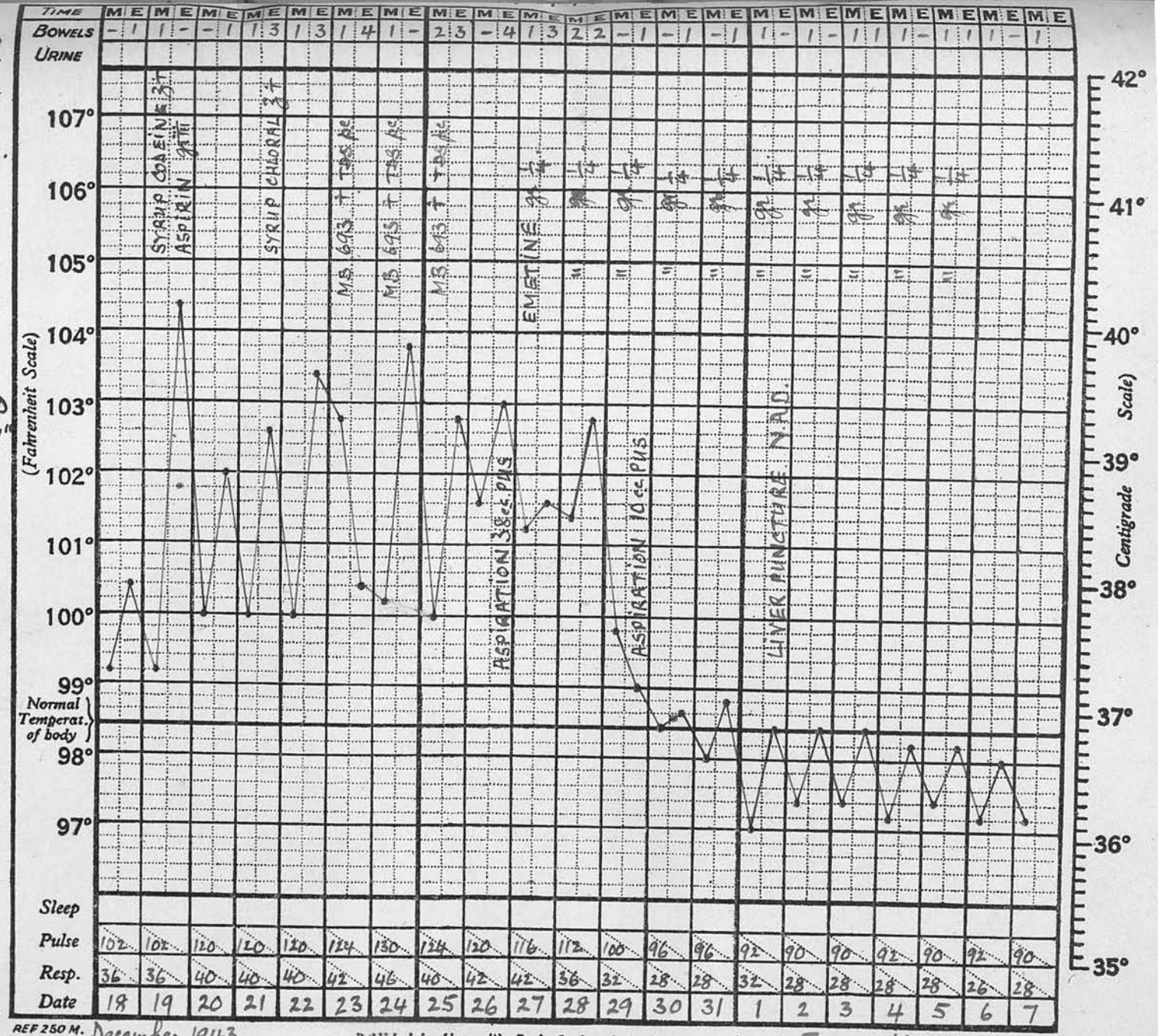
"EMETINE COMBINED WITH ASPIRATION"

SEE REFERENCE QUOTED UNDER "EPIDEMIOLOGY."

RESULT: CURED.

Date of admission 18/12/43.

Discharged 7/1/44.



REF 250 M. December 1943.

Published by Henry W. Bush & Co. Ltd. London & Croydon. January 1944.

DISEASE

AMOEBIC LIVER ABSCESS.

Ruptured through the skin in the Right Hypochondrium

~~Bristol~~ RLIN.

NAME Male.

AGE 39 years.

DIET

CASE BOOK Nº

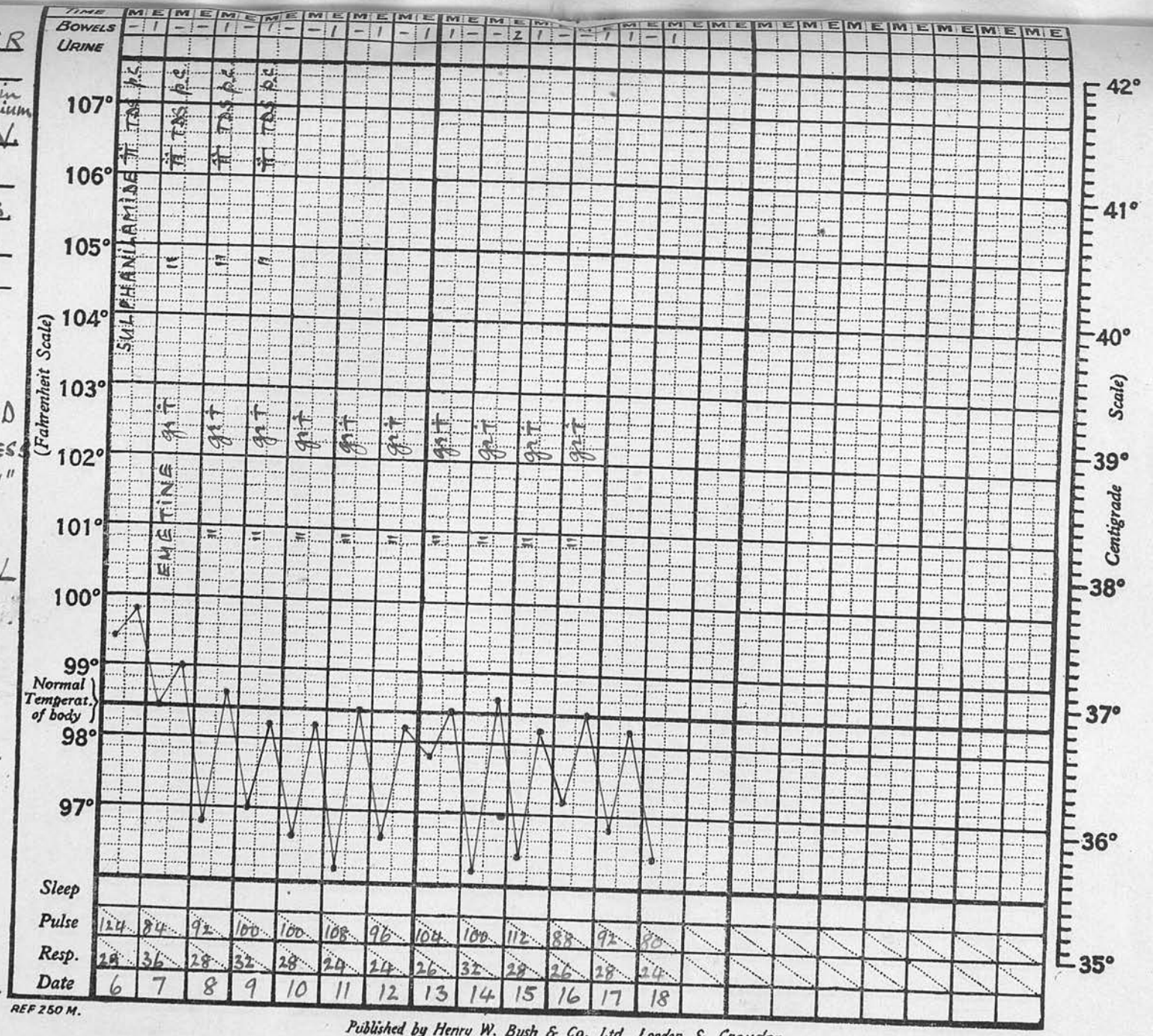
NOTES OF CASE

SEE "EMETINE AND BURST LIVER ABSCESS THROUGH THE SKIN" IN CASE 3 UNDER "CLINICAL MEMORANDA".

RESULT: CURED.

Date of admission 6/2/44.

Discharged 18/2/44.



REF 250 M.

Published by Henry W. Bush & Co. Ltd. London & Croydon.

DISEASE

AMOEBIC LIVER ABSCESS.

Mr. John Gemmell.

NAME { Male

AGE 30 years.

DIET

CASE BOOK Nº

NOTES OF CASE

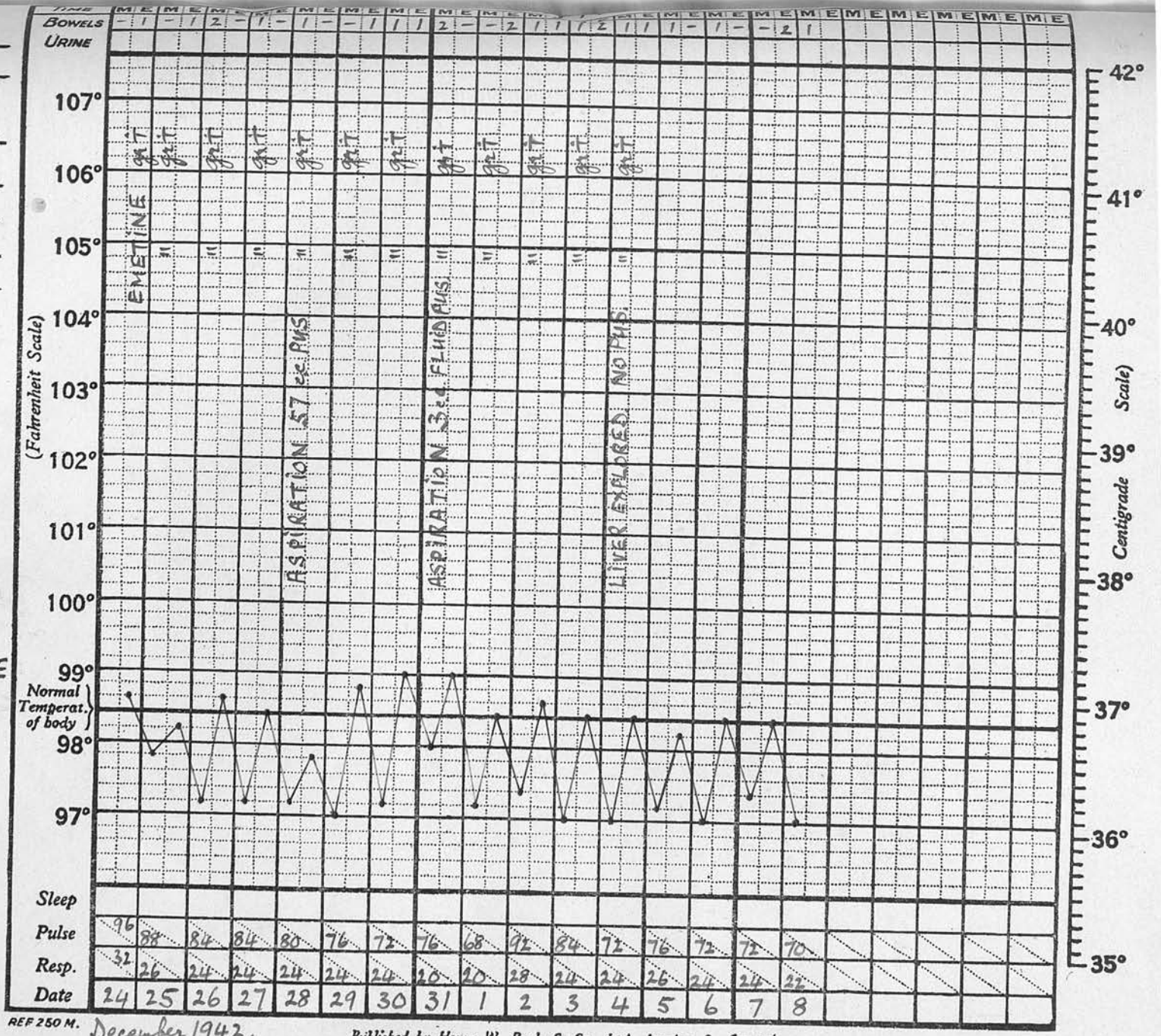
SEE "EMETINE COMBINED WITH ASPIRATION" IN CASE 4 UNDER "CLINICAL MEMORANDA".

NOTE COMPARATIVE APYREXIA IN CONTRAST TO CHART IV.

RESULT: CURED.

Date of admission 24/12/42.

Discharged 8/1/43.



REF 250 M. December 1942.

Published by Henry W. Bush & Co. Ltd. London & Croydon.
January 1943.

DISEASE

AMOEBIC LIVER ABSCESS.

Emilien Jeanne.

NAME { Male.

AGE 36 years.

DIET

CASE BOOK Nº

NOTES OF CASE

"EMETINE COMBINED WITH ASPIRATION.

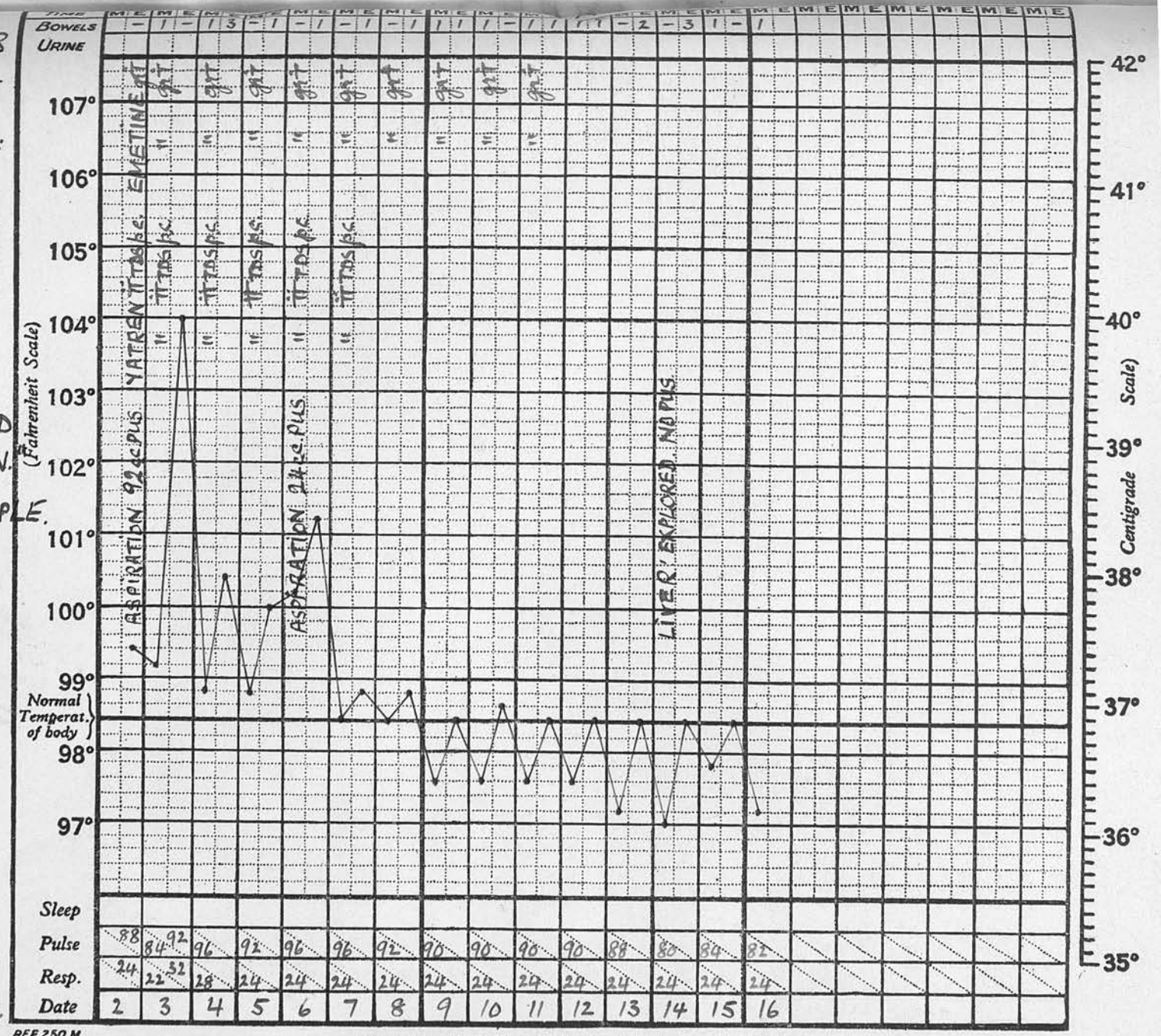
AN ADDITIONAL EXAMPLE.

NOTE PYREXIA IN CONTRAST TO CHART III.

RESULT: CURED.

Date of admission 2/6/44.

Discharged 16/6/44.



REF 250 M.

Published by Henry W. Bush & Co. Ltd. London & Croydon.

DISEASE

AMOEBIC LIVER ABSCESS in the Right Hypochondrium.

NAME Esaï Amour.

Male.

AGE 52 years.

DIET

CASE BOOK Nº

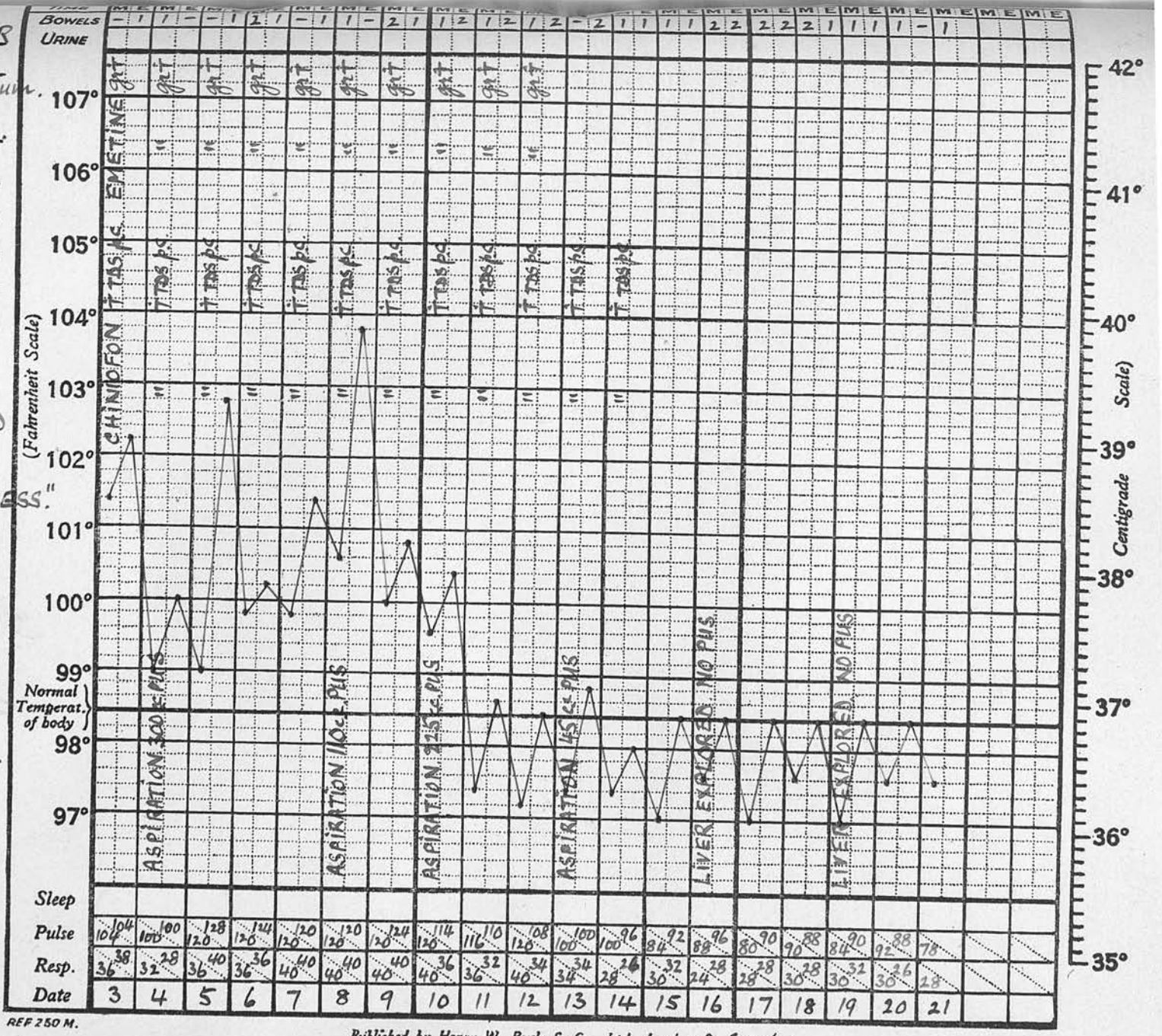
NOTES OF CASE

SEE "EMETINE AND ASPIRATION ON AN ENCYSTED LIVER ABSCESS." IN CASE 8 UNDER "CLINICAL MEMORANDA".

RESULT: CURED.

Date of admission 3/12/46.

Discharged 21/12/46.



REF 250 M.

Published by Henry W. Bush & Co. Ltd. London & Croydon.

DISEASE

ENCYSTED LIVER ABSCESS
Right Laterally
following treatment for Amoebic Liver Abscess in the Right Hypochondrium.

NAME { Esaï Amour.

AGE Male. 51 years

DIET

CASE BOOK Nº

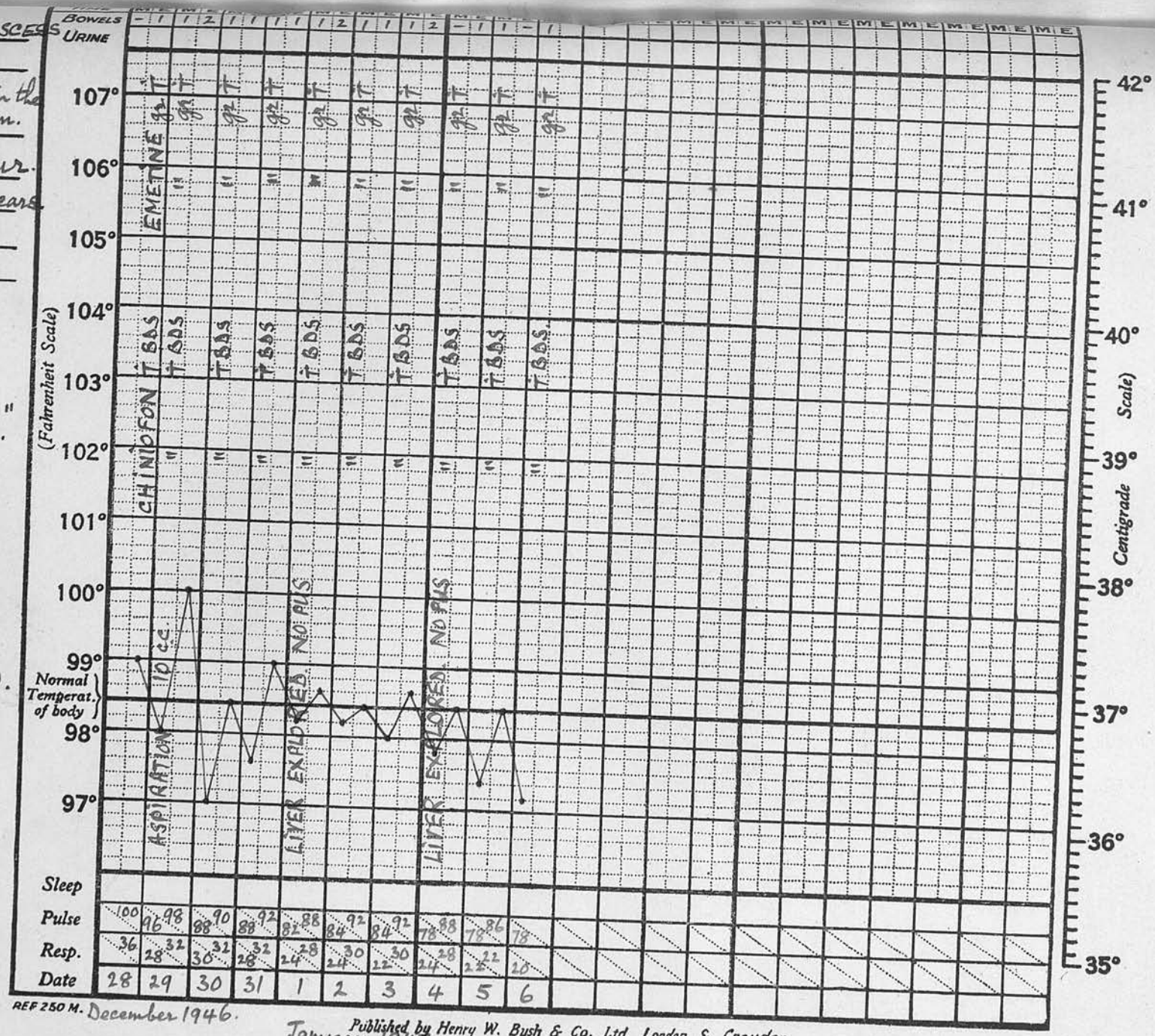
NOTES OF CASE

SEE "CHART V A."

RESULT: CURED.

Date of admission
28/12/46.

Discharged 6/1/47.



REF 250 M. December 1946.

Published by Henry W. Bush & Co. Ltd. London & Croydon.
January 1947.

DISEASE

AMOEBIC LIVER ABSCESS.

NAME { Roger Adelaide. Male.

AGE 22 years.

DIET

CASE BOOK Nº

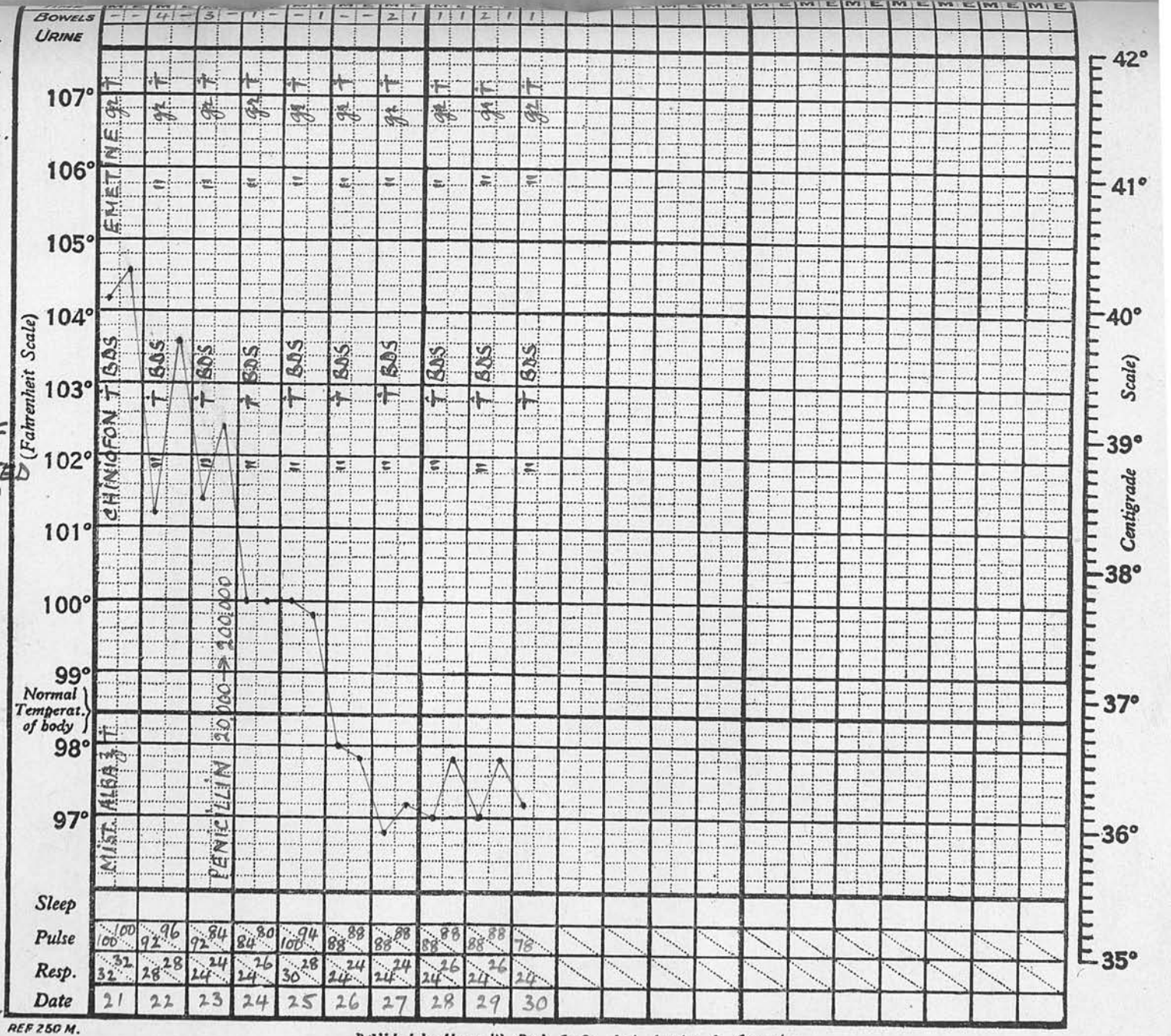
NOTES OF CASE

SEE "TREATMENT OF CASES OF EXPECTORATED LIVER ABSCESS PUS." IN CASE 14 UNDER "CLINICAL MEMORANDA".

RESULT: CURED.

Date of admission 21/12/46.

Discharged 30/12/46.



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DISEASE

AMOEBIC LIVER ABSCESS.

Mme. Jean Baptiste Dine.

NAME { Female.

AGE 78 years.

DIET

CASE BOOK Nº

NOTES OF CASE

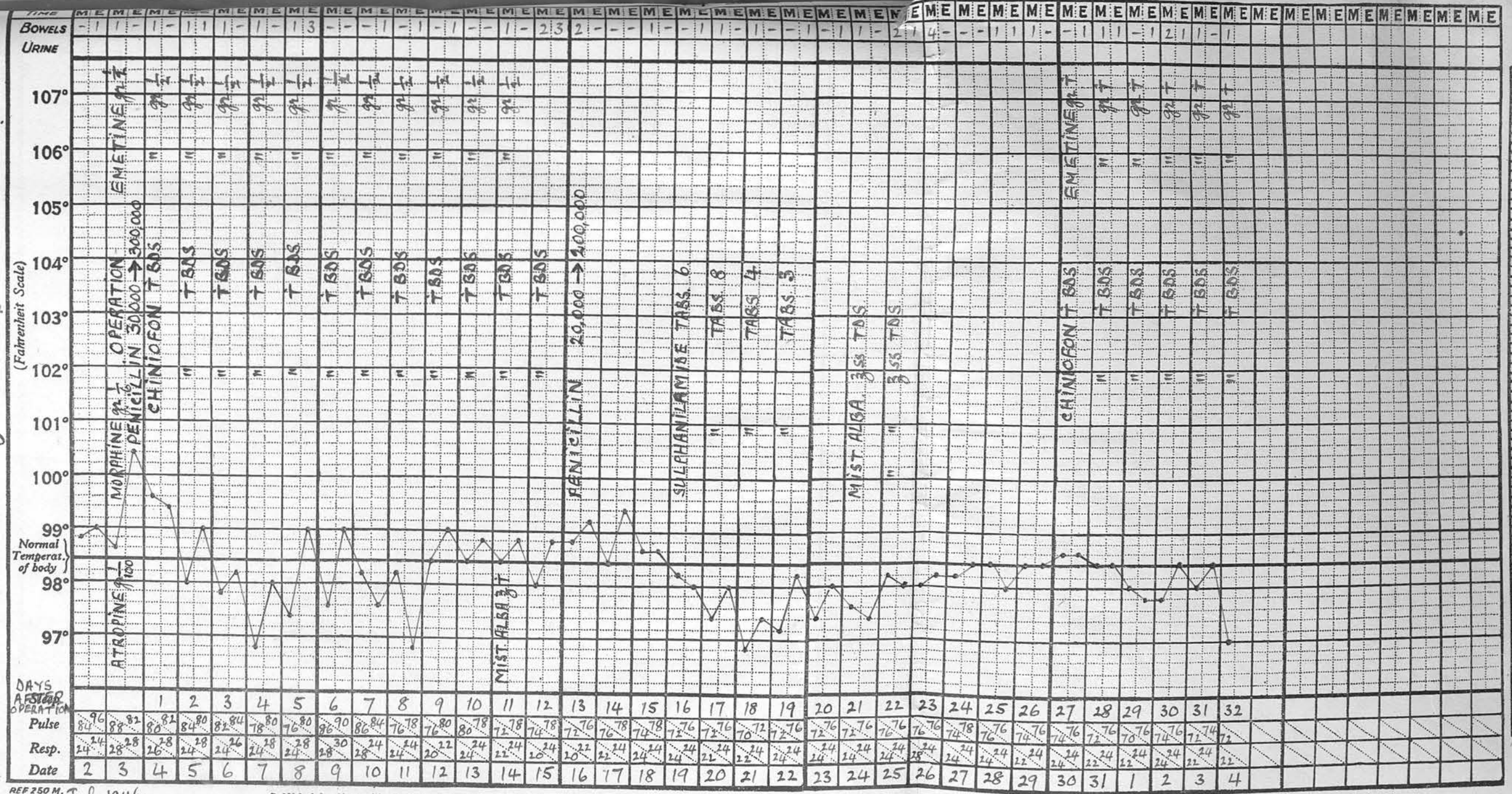
Laparotomy and Drainage under Nonitox.
Two drainage tubes in situ on 3/7/46.

SEE "LAPAROTOMY AND DRAINAGE COMBINED WITH EMETINE AND CHINIOFON" IN CASE 16 UNDER "CLINICAL MEMORANDA".

RESULT: CURED.

Date of admission 2/7/46.

Discharged 5/8/46.



REF 250 M. July 1946.

Published by Henry W. Bush & Co. Ltd. London & Croydon.

Published by Henry W. Bush & Co. Ltd. London & Croydon. August 1946.

RUPTURED AMOEBIC LIVER ABSCESS WITH PERITONITIS.

François Comme.

NAME { Male.

AGE 30 years.

DIET

CASE BOOK Nº

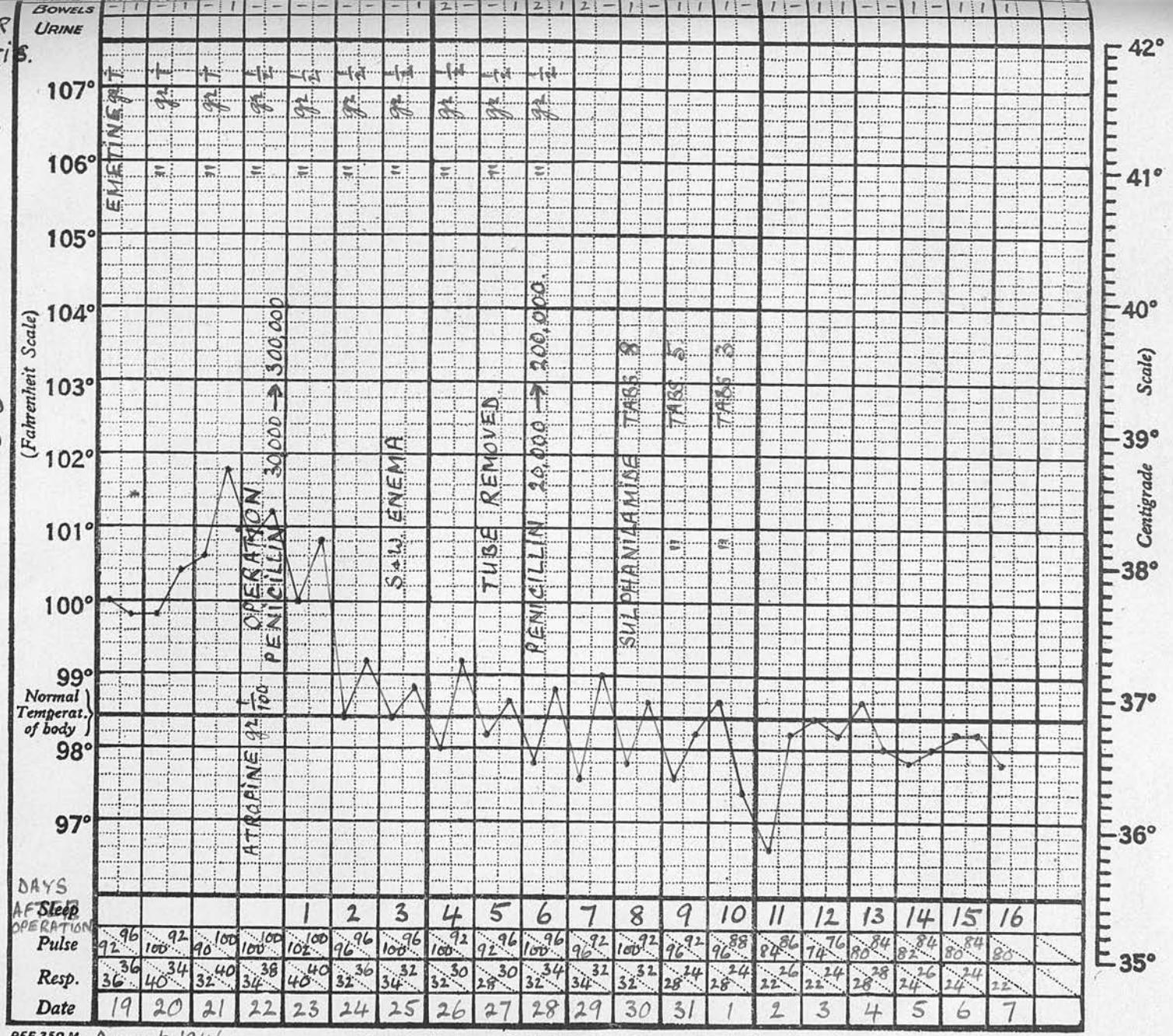
NOTES OF CASE

SEE "LAPAROTOMY AND DRAINAGE COMBINED WITH EMETINE AND CHINIOFON" IN CASE 17 UNDER "CLINICAL MEMORANDA".

RESULT: CURED.

Date of admission 19/8/46.

Discharged 7/9/46.



REF 250 M. August 1946.

Published by Henry W. Bush & Co. Ltd. London & Croydon. September 1946.

THIRD EDITION

SKETCH MAP OF
MAHÉ ISLAND
(SEYCHELLES)

Approximate Scale : 1/70824 or 1 inch = 1·1 Miles

0 ½ 1 2 3 4 MILES

REFERENCE.

- Roads (Motor)
- Roads (narrow)
- Footpaths
- Roman Catholic Churches +
- Church of England ⛪
- Island or Islet ..... Id or Is
- Point ..... Pt
- Hospital ⊞
- Police Stations ⊙
- Steam Route

4° 32' W. 1941 Annual Var. 6° W.

Magnetic

North Islet
North Point
MT HOWARD 1400
NORTH HILL 1067
North East Bay
North East Point
Houdoul Rock
L'Anse L'Etoile
SIGNAL HILL 1341
North West Bay
BEAU VALLON
Connan Pt
VICTORIA HARBOUR
Victoria Lighthouse
White Tower
Victoria
ST LOUIS HILL 315
Inner Harbour
Victoria Pier
Port Office
Houdoul Jetty
Belle Ombre
Anse Major
Ho.
Cross on Sumt
MT SIMPSON 1220
TROIS FRERES 2510
Rochon R.
RED HILL
Cape Ternay
Baie Ternay
TERNAY BLUFF
MORNE SEYCHELLOIS
2093
MORNE BLANC 2208
Ternay Pass
Port Launay
Le Rocher
Val Mark
Brilliant
Petite Paris
Conception Id
Landing Place
L'Islette
Port Glaud
Thérèse Id
Les Trois Dames
Grand Anse
Isle Vache
Pt Cascade
Cascade
Annonyme Id
Rat Id
La Tortue Rock
South East Id
MT HARRISON 2257
MT SEBERT 1809
Pte La Rue
Anse Faure
Barbarons
Anse Polite
Anse Boileau
Ch. Anse Boileau
MONTAGNE POSEE ROAD
Le Cap
CASTLE PO 1701
Anse Louis
Anse aux Poules Bleues
Anse à La Mouche
L'Esperance
OLIVER HILL 763
Pt au Sel
Souris Id
Chauve Souris Id
CANELLES RD
Anse Soleil
Anse Royale
ANSE ROYALE
Convent
Anse Petite
CONICAL HILL 689
Baie Lazare
Anse Baleine
Anse Bougainville
Pt Lazare
Pt Maravi
MT LOCKYER 1221
Anse Parnel
Cap Maçons
Anse Forbans
Takamaka
Anse Takamaka
QUATRE BORNES RD
CASTLE HILL
QUATRE BORNES
Roche de l'Intendance
Anse Marie Louise
Anse Intendance
Pt Capucin
Pt Golette
Mancienne Rock
Anse Corail
Police Bay
Petite Boileau
Cap Malheureux
Police Point
Capucin Rock
ST ANNE Ip
Beacon Id
Ste Anne Channel
Moyenne Id
Round Id
Long Id
CERF Ip

Bird Id

MAHÉ
AND PRINCIPAL ISLANDS
of
SEYCHELLES GROUP

Approximate Scale : 1 Inch = 10·5 Miles

MILES 10 5 0 10 20 MILES

Denis Id
Aride Id
Curieuse Id
The Sisters
PRASLIN Ip
Félicité Id
Grand Anse
St Anne
La Digue
Marie Anne Id
North Id
Silhouette Id
Mamelle Id
N. Pt
St Anne Id
Victoria
Cerf Id
Conception Id
Thérèse Id
MAHÉ Ip
Anse Boileau
Capucin Pt
Recif Id
Frigate Id

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